

ARMED FORCES

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COAST GUARD
MARINES

MANAGEMENT



Feature

*Management Control
in the
Strategic Air Command
By General LeMay*

Departments

- *What's New in Suggestions?*
- *Washington Management*
- *Conservation Thoughts*
- *Service Schools*
- *News Briefs from the Services*
- *Book Reviews*
- *Letters to the Editor*
- *News and Activities of Armed Forces Management Association*
- *Cost-Cutting Products*

DITION COPY 1
On the Cover

Pictured on the cover is General Curtis E. LeMay, commander of the Strategic Air Command, whose service around the world with the Air Force has earned him the Distinguished Flying Cross, the Air Medal with 3 Oak Leaf clusters, and the Silver Star ad infinitum, and makes him exceptionally qualified for his present vital assignment which he's held since 1948.

Vol. 1, No. 9 June, 1955
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NEWS BRIEFS

from the

SERVICES

Fourth Army Headquarters, Fort Sam Houston, Texas. A maneuver standard operating procedure has recently been developed after complete studies by the Fourth Army Staff. Eventual goal is to eliminate all general plans for field exercises, and to enable the director to issue all tactical instructions in the form of operational orders and a few memoranda to interpret the SOP to fit the particular situation existing in the exercise. A second purpose is to reduce the director staffs and number of planners required to prepare these exercises by reducing the volume of paper work and planning.

El Toro, California. Plans have been completed by the Marine Corps to move headquarters of the 3rd Marine Air Wing from Miami, Florida, to El Toro, California. The Wing is being moved to bring into balance the air component teamed with the 1st Marine Division who are returning from Korea to Camp Pendleton. Operational units of the 3rd Marine Air Wing will remain at Miami as a part of the Aircraft, Fleet Marine Force Command.

United States Coast Guard Academy, New London, Conn. Captain Fred P. Vetterick USCG has reported as the assistant superintendent of the Coast Guard Academy. Captain Vetterick was formerly operations chief for the 3rd Coast Guard District.

England Air Force Base, Louisiana. Alexandria Air Force Base became England Air Force Base last month in memory of Lt. Col. John Brooke England, USAF who was killed in an F-86 fighter-bomber accident in France last November.

Camp Kilmer, New Jersey. Temporary home to thousands, Camp Kilmer will be inactivated on 30 June 1955 and placed in a standby status for use in a future emergency. Personnel Center activities will be transferred to Fort Dix, New Jersey.

Kaman Aircraft Co. (Bloomfield, Conn.). Chief Test Pilot Al Newton and Crew Chief Bill O'Donnell, were returning from NATC Patuxent and flying their Kaman HOK Helicopter over the New Jersey turnpike, when they noticed a car driving south that was "on fire." They landed, and put out the fire with an extinguisher, much to the surprise of the lady who had been driving. She had stopped and was unloading her car and had not noticed the arrival of the "flying fire department."

VF-94 Naval Air Station, Moffett Field, Calif. The welcome mat was stretched recently for the arrival of VF-94 who after three years at NAS Alameda, moved lock, stock and barrel, to provide better distribution of base loading of West Coast squadrons. The squadron, a part of CVG-9, has completed two Far East tours.

Marine Corps Air Station, Miami, Florida. The Marines came to the rescue again recently in the form of blood donors. A man was dying at St. Francis Hospital in Florida, and late at night, with the hospital running low on blood, the doctor thought of the obvious . . . call the Marines. Within minutes after the Officer of the Day received the call he had 10 volunteers ready to go. These men with Marine Corps traditions saved another life.

Ladd Air Force Base, Alaska. General T. Alan Bennett received an unusual gift from the noncommissioned officers recently in recognition for his leadership in aiding the return of prestige to NCO's. A full color replica of the Air Force seal, painted by T/Sgt. Louis R. Youngs was proudly accepted by General Bennett.

McClellan Air Force Base, Sacramento, California. The Department of the Air Force and the Air Material Command have every right to be proud of the Management Program at this installation.

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January 21, 1955 **American Aviation DAILY** Page 128

MATS REPORTS SUBSTANTIAL SAVINGS FROM USE OF SIMULATORS

West Palm Beach AFB, Fla. -- The Military Air Transport Service is saving more than \$4,000,000 per year in pilot training costs at its training center here through the use of five Curtiss-Wright flight simulators, MATS officials have disclosed. The simulators involved include three of the Boeing C-97 type and two Douglas C-124 type units, each costing about \$800,000.

MATS officials said that these five simulators represent the largest single concentration of multi-engine flight simulators in existence. Although the USAF has taken delivery of 115 of 174 electronic simulators ordered to date, a large percentage of these have been single-engine aircraft simulators.

The first simulator to be installed at the MATS base, which was reactivated in 1951, was a C-97 unit delivered in November 1952. Since then, MATS has accumulated more than 20,000 hours of training time on the C-W simulators and trained more than 1000 crews. During the entire period total down time due to maintenance, during which training could not be made or completed, was only 138 hours 5 minutes. Average training time per day for the five simulators has ranged from 10 hours on the lowest time C-97 simulator to 13 hours on the highest time C-124 unit.

Comparison Values Being Developed

For general comparison purposes, MATS considers that it costs \$30 per hour to operate a four-engine aircraft simulator compared with \$350-\$400 per hour for the aircraft. As yet it has not been possible to say that a given number of flight simulator hours are the equivalent of so much actual flight time but some specific values are expected to be developed by next summer. At present MATS is using several different ratios to gain practical experience on relative merits of the two types of training. In these tests simulator time ranges from one hour per hour of actual flight time, to 20 hours aircraft time to 30 hours simulator time.

Curtiss-Wright is expected to deliver the first C-118 (Douglas DC-6A) simulator to MATS this summer. It is one of five types of simulators now making up approximately \$8 million dollars in simulator backlog at C-W. The other types include simulators for the Lockheed C-121 (Super Constellations), Lockheed C-130, Convair's C-131 (240) and the Boeing RB-52.

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Management Control In the Strategic Air Command

by General Curtis E. LeMay

The General Discusses the Key to Efficiency in a Vital Segment of Our Nation's Defense System

MANAGEMENT control is the key to efficiency in the Strategic Air Command. Careful programming and constant evaluation of progress are as indispensable to us as to any large, decentralized industrial firm.

Americans generally know that the Strategic Air Command is the long range, nuclear bombardment arm of the United States Air Force. They think of this command as a major deterrent to aggression, and therefore as a factor in maintaining world peace. They also know that it is ready to strike swiftly against any nation that might risk attacking us. They know that we are seriously intent upon our military responsibilities.

We are equally serious about our economic responsibilities, and are daily concerned with returning to the American public a profit on the great investment that has been made in this command. We can say that SAC is a series of planned management operations yielding a profit on our capital investment. The product that yields this profit is the fully trained and equipped combat crew. We like to think of the profit it returns as being either continuing peace or victory if we must fight a war.

When studied from this point of view, SAC is comparable to any major business organization. From its material and human resources, it must produce a profitable return. Commanders in SAC are made especially conscious of this fact, since their operating resources derive from public funds. We rate our commanders on their management ability as well as on their military operations. We have proved that the same personal characteristics that make a good commander also make a good manager.

Our commanders, therefore, are our executives. Every day they deal with much the same problems their counterparts in civilian industry handle. In addition, they must deal with matters peculiar to the Strategic Air Command. A civilian executive, for example, knows where his manufacturing plants are and he can expect them to be in the same places for some years to come. His business has a built-in stability. The SAC commander, on the other hand, must always be ready to pick up much of his physical plant, move it to any part of the world, and keep it operating at the same time. His business has a built-in mobility that is

vital to the quality of his product—the trained and equipped combat-ready crew.

The responsibility of commanders for the wise use of public funds is evident from the capitalization of the Strategic Air Command. The United States has invested more than \$12 billions in SAC, including experience of its people, building up a long range bomber force that requires a direct operating expenditure of \$867,000,000 annually.

This capitalization has accrued to the Strategic Air Command over a period of years. The Air Staff allocates to us certain resources from the over-all authorizations granted by the Congress. It is our responsibility to distribute these resources in such a way as to produce an orderly growth of our combat capability. We cannot allow any project, or training program, to be delayed by lack or shortage of one of its components. We must also guard against waste through over-estimating any requirement. To guard against production slippage, program control measures have been applied throughout the command.

We begin management control with a clear objective in sight. We program every detail required to meet that objective. We schedule every phase of the program. Our resources—personnel, equipment, supplies, and physical facilities—are fed into a production line, meeting at the right time and place, and coming off the line as a finished product.

The factory building our product is the B-47 jet bomber wing. The building of a new wing begins two years before the delivery of the first bomber. When the requirement for a new wing is established, planning begins. All requirements for the finished product are determined and their production is scheduled. These are set forth in budget requirements. Funding for each phase of production is set up.

Pilot and observer training begin almost at once, 22 months in advance of the delivery of the first bomber. Specialized training for observers begins 19 months in advance. Intensive, specialized training of these men continues until five months before delivery date, when combat crews are formed. These crews of three men each then train as a team for another four months. After a short leave, the crews report to the new wing

(Continued on page 16)

Industrial Research Is The Executive's Responsibility

By: W. F. Rockwell, Jr., President
Rockwell Manufacturing Company

TOP MANAGEMENT'S responsibility to stimulate research and product development is directly aligned with the executive's responsibility to provide a proper return for the stockholder and the proper product for the customer. If a company expects to remain among the leaders in the pace of modern industry, it is essential to make research an integral member of the corporate team.

There are four important areas for the executive to consider in establishing an effective research and development program:

1. Providing the proper climate for research.
2. Determining areas of desirable research.
3. Employee participation.
4. Incentives for development of research thinking.

The glamour in the word research has caused its use to go beyond a reasonable working definition. Perhaps the most adequate definition I have heard is, "Research is a process of finding out what you are going to do when you can't keep on doing what you are doing now." This is industrial research when accompanied by a definite commercial objective. Unlike engineering projects, industrial research projects, although they have a commercial objective, seldom have a clear idea as to how it will be reached.

In my opinion, basic research—as distinguished from industrial research—can be carried on by only a few of our industrial organizations today. The average corporation must have a commercial objective in order to appropriate stockholder's funds.

Providing the Proper Climate for Research

In providing the proper climate for research, management attitude



establishes the basic foundation.

The first obligation is to provide good research direction. If possible it should be someone from within the organization who has a broad view of all the company's products, and understands and respects the type of people assigned to research work.

The second obligation is to provide good working conditions and suitable facilities. I think the laboratories should be close to the plant so frequent contact with key sales, production and service personnel can be effected. However, some large corporations have found it advantageous to utilize facilities completely separated from the plant.

The third obligation is to provide an adequate security and compensation structure. Men and women dedicated to research work should have a free mind with respect to financial matters as far as possible.

The fourth obligation is to provide the research director with responsible authority to exercise initiative within his budget. He

must be free to start and stop certain projects at any time without too much "red tape." An atmosphere of freedom to probe into new ideas as they occur must always exist. Top management should acquaint him with the company's objectives and thus assist them in the company's growth through proper research.

The fifth obligation of management is to be reconciled to slow and steady progress. A research department with a highly developed "nose for novelty" coupled with reasonable optimism is highly desirable.

Since the customer is ultimately the one who benefits most from successful research, industry should attempt to show the public that research is nothing more than capital which industry is investing in the hope of progress. The proper climate for research therefore extends to advising the public of the "why" and "what" of industrial research.

Determining Areas of Desirable Research

In determining areas of desirable research, we must consider that research, because of its character, will not fit any set pattern. Methods for selecting research projects therefore, are bound to be different in various organizations. It is essential to have a well-defined company policy setting down the broad aims and hopes of achievement for research. The policy should provide for a wide degree of freedom and flexibility with respect to execution of the work.

The answers to two questions should precede any industrial research project:

1. Is knowledge in the particular field sufficiently developed to give the project promise of success?
2. Is it likely that anticipated results can be profitably commercialized?

Timeliness can be an important factor in stimulating research projects and should be taken advantage of whenever possible. Research men should be constantly scanning their fields of endeavor for trends due to new technological advances in electric, chemical and mechanical fields which will improve their products. To recognize the trend

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early and act on it—or better yet to originate the trend—is good for the soul of any research man and for the morale of the entire research group.

Research personnel are generally endowed with attitude and dispositions not easily demoralized by long-term, obstinate projects. However, to assure a good batting average for the laboratory and to maintain a high degree of enthusiasm at all times, the research program should include a sufficient number of projects that are reasonably certain of solution.

Another important factor in the research program is the balancing of short-, medium-, and long-term projects. If the research executive is seasoned and experienced he will diversify his planning to include the proper balance of projects. Short-term projects, in general, are a reasonably sure investment, but with a low return. Medium-term projects, which may require three years, have a fairly sure return, but with a higher yield. Long-term projects of five years or more are not so definite but in some cases with proper selection may yield a return of 10 to 1. The objective should be to spread the investment in research projects to provide the best average return.

In our organization we have set up a Products Committee. This Committee maintains a continuous study of existing and proposed new products to determine exactly what we need to improve our products and to progress in our particular fields of endeavor. The functions of this Committee become involved with the research department in connection with research study of our product lines. The reviews of this Committee have been helpful in steering our research program.

Employee Participation

The matter of employee participation presents a number of problems which must necessarily be solved in the light of the particular organization. If a committee is responsible for evaluating research projects, they must be aware of the fact that good suggestions may come from individuals or groups in all levels of the organization.

I think that in most cases, all the employee generally requires is to be informed of the company's

needs for ideas for product development and that even some very small idea which may seem self-evident to him may be a valuable contribution not only to his company and its products but to industry in general.

Enterprising research personnel will recognize that all company departments are sources for product development and improvement—more especially the sales and service departments whose reports will reflect improvement needs.

Sales employees who learn to recognize seemingly "little things" which will improve or further extend the usefulness of the product can be very valuable in stimulating employee participation.

Incentives for Development of Research Thinking

Many varying philosophies exist in the problem of providing incentives for development of research thinking. All incentives must tie in with opportunity which is associated with a logical combination of environment, compensation and the possibilities of obtaining a possible goal.

Any form of incentive is subject to failure unless proper environment exists. In other words, the place, the people, the product and the position are all involved.

Policies of compensation must contain two elements: first, to reflect the contribution of the research worker to the general welfare of the company; and second, to adequately relieve the research worker of the pressure of ordinary personal financial matters.

Since the goals of the individuals vary with their thinking, it is important to demonstrate to the research worker that the company is not only interested in stimulating research, but also in providing for the general welfare of its employees and in building from within.

In considering incentives for any program of stimulating research thinking the important factors seem to be those which inspire the worker. This inspiration can be brought about only if the research worker feels that his contribution to the company, industry and society is given recognition in one form or another.

New Housing Act Aids Career Servicemen

All career servicemen now can obtain government-insured loans for new homes on liberal terms similar to those previously available only to discharged veterans.

The National Housing Act, passed by Congress last year, does for the career man what the GI Bill does for the ex-serviceman.

Under this law, any serviceman who has had at least two years of active duty is eligible for a government insured housing loan at the same 4.5 percent rate of interest prevailing under the GI Bill. The only exceptions are those ordered to active duty for training purposes only. The latter are not eligible for loans.

A serviceman may apply for a loan up to 95 percent of the value of the dwelling as appraised by the Federal Housing Administration. The maximum amount is \$17,100.

Under the new law, the loan may be repaid under a 30-year mortgage term or a term equal to three-quarters of the FHA's estimate of the "economic life" of the house, whichever is less.

The government will insure loans only on one-family dwellings to be owned and occupied by the serviceman applying. Loans can only be made for purchase or construction. A serviceman can't apply for a loan under this Act to refinance a house he already owns.

Air Force To Get More

The Air Force, which will receive almost half of defense funds approved for fiscal 1956 starting July 1, is slated for a bigger share of military money in 1957 and 1958. This is a far cry from not too long ago. The Defense Department used to split its funds almost equally between the Army, Navy and Air Force.

The budget now before Congress will give the fly boys about \$14½ billion as compared with a little less than \$9 billion for the Navy and a bit more than \$7 billion for the Army.

Big squeeze will come on the Army in fiscal 1957, which starts July 1, 1956. The soldiers have been living off the shelf and will need money for "major procurement."



Lt. Gen. H. R. Harmon
First Superintendent
USAF Academy

UNITED STATES AIR FORCE ACADEMY TAKES SHAPE

people, outside of professional educators, can actually comprehend the magnitude of establishing such an academy—especially when this job must be completed by July 11, of this year.

"To accomplish this challenging task," says Brig. General Don Z. Zimmerman, Dean of Faculty, "means that we must find a completely accredited, major university—staff it with a top flight faculty—provide full facilities to feed, clothe, house and administer the first class this summer."

The curriculum General Zimmerman will administer is the result of five years of study and adjustment that began in 1948 at the Air University in Montgomery, Alabama, before the campaign for the academy started. It was here that a group of civilian and Air Force educators, unhampered by military customs and traditions, designed the courses that will be used to teach the nation's career airmen.

All of these courses have been carefully reviewed by selected professors from Stanford and Columbia Universities, and from the Massachusetts Institute of Technology. Each major field of learning will follow a logical progression through the four years. When a cadet is studying Ancient History, for example, he will be reading the literature and exploring the philosophies of the same era.

The academic load the Air Force Cadet will be expected to carry is, without a doubt, staggering. His school year will be divided into two 17-week semesters which will include one week for examinations during the semester year. Upon graduation he will have completed 2,779 hours of academic participation.

Generally, the cadet's course of instruction will cover two areas of learning, Social Humanities and Scientific Studies. These two fields

will award him a Bachelor of Science degree upon graduation.

In addition to his scholastic studies, the cadet will be required to complete a rigid "Airmanship" course that will lead to the rating of Aerial Navigator. In this training program, he will be instructed in the composition, administration and control of military forces, along with a thorough training in leadership. He will also receive 25 hours of light plane pilot training.

The young man selected for training at the Air Force Academy will be the possessor of a valuable prize upon graduation. He will have utilized a scholarship estimated to be worth about \$35,000; have a Bachelor of Science degree; training that will reward him with a commission in the Regular Air Force, and a background that will fit him into the role of leadership in the field of aviation.

Like his contemporary at Annapolis and West Point, he will receive a monthly pay check, his food, lodging, clothing and complete medical care, plus a free \$10,000 insurance plan.

Much has been written about the academy's future in the field of athletics. Contrary to popular belief, intercollegiate football will play only a minor role in the school's present athletic program, at least in the first few years. With only 300 cadets entering the academy each year, it is doubtful they could field a team that could make a showing against Notre Dame, West Point, Annapolis and other major university teams.

What type of young man is the Air Force looking for to train as its future commanders? They are not looking for a genius or a superman, but they are seeking the best. "The cream of the crop," as they put it. They want young men who are in excellent physical condition and above average in intelligence.

In his small, newly formed headquarters at Lowry Air Force Base, in mile-high Denver, Colorado, where President Eisenhower maintains the Summer White House, Lieutenant General Hubert R. Harmon, the first Superintendent of the new United States Air Force Academy, has mustered some 350 officers and airmen to carry out specific and complicated duties, molding into shape the nation's third service academy.

To General Harmon, heading this future great Air Force university, is the realization of a dream that began in 1947, when the Air Force won its independence from the Army and became a separate service in its own right. Today, after nearly seven long years of waiting and planning and digging through mountains of red tape and paperwork, his dream is fast becoming a reality.

Ever since his West Point Classmate, President Dwight Eisenhower, brought him out of retirement and appointed him superintendent in August 1954, the genial sixty-three-year-old Air Force veteran spends most of his waking hours fulfilling that dream—picking a staff, working out curriculum problems, organizing the temporary quarters in Denver, and planning its permanent home at the beautiful Colorado Springs site.

The mission the people at the academy have been assigned to accomplish is a mammoth one. Few

To be eligible, a young man seeking entrance must meet six specific requirements—be a citizen of the United States; be of good moral character; be at least 17 years old and less than 22 years; never have been married; be physically qualified for flying duties; and pass the mental entrance examination.

An interesting departure from the Army and Navy institutions is the avenue of admission. The Air Force Academy will handle their selections on a slightly different basis for the first six year period. Instead of the usual two nominations by each congressman, the Air Force is asking for ten nominations which will amount to some 5,000 applications each year. Of the initial class of 300 cadets, nominations for 255 vacancies were allotted to members of Congress and divided among the 48 states and territories. Forty-five vacancies have been allotted to the President and the Armed Forces.

Young men not in the military service, who are interested in becoming an Air Force cadet, academy officials emphasize, must apply to their Senator or Representative for their nomination.

The concept of an Air Force academy is not new. As far back as the early 1920's, far visioned airmen — Generals Billy Mitchell, "Hap" Arnold, Tooey Spaatz, Hoyt Vandenberg, and many others—saw the need for a separate service academy geared for the fledgling air service. Actual study leading to its establishment, however, didn't begin until March, 1949, when the late James Forrestal formed the Service Academy Board. He appointed a group of distinguished educators to make an extensive study of the need for such a service school. They gave a unanimous indorsement that led Congress to authorize the Air Force to spend some \$126,000,000 to start construction on its own service school in 1955.

President Eisenhower signed the bill authorizing the establishment of the academy on April 1, 1954, making the far-fetched dreams of many veteran airmen a reality. Secretary of the Air Force Harold Talbott immediately appointed a site selection committee to find a home for the school. Before a final

decision was made, the site committee traveled more than 18,000 miles and inspected sixty-seven places in twenty-seven states before they narrowed the sites down to three definite locations.

After much deliberation, Secretary Talbott selected a site eight miles north of Colorado Springs to be the permanent home. Here the school buildings will be erected in the shadow of a massive hunk of limestone called Cathedral Rock, on 15 to 20 thousand acres of rolling ranchland.

Mile-high plus Colorado Springs area is already well known to many uniformed people. The Continental Air Defense Command, the Army Anti-aircraft Command, and Fort Carson are all situated in the popular resort city. This fast growing city has put out the welcome mat to the Air Force Academy and to the 12,000 people it will eventually bring. Soon a new set of military traditions will be added to the area. The stirring Air Force song will echo across the serene hill-sides, and the massive Cathedral Rock will rival Tecumseh's figurehead at Annapolis and the citadel on the Hudson. An Airman's dream has come true.

PX On Wheels Offers Added Service

When a soldier or airman cannot go to his PX, the PX goes to him in the form of 193 mobile exchanges now in use in the domestic Army and Air Force Exchange Service, Major General H. L. Peckham, Chief, A&AFES, has announced.

"Our mission is service," General Peckham stated. "Many Army and Air Force personnel are frequently assigned to duties on flight lines, firing ranges, maneuver areas, and similar remote places where it is impractical to establish permanent exchanges. Our solution has been to utilize mobile retail stores and snack bars to bring such personnel the service they require. It has proven to be both economical and practical."

The Exchange Service Chief noted that the purpose of mobile exchanges is not to replace permanent exchange facilities but to supplement them.

A LOT OF PIPE

The U. S. Army's Corps of Engineers is laying more than 600 miles of pipeline through muskeg swamps and over barren frozen wastes of the Far North to connect the U. S. military installations in the interior of Alaska to provide these installations with additional petroleum.

The Army's pipe-laying project will relieve the burdens now imposed on the crowded ports of Seward, Whittier and Anchorage in supplying the interior bases with petroleum.

Starting at the port of Haines in southeastern Alaska, the eight-inch pipeline will run to Fairbanks. Part of the pipeline will follow the route of the Alaskan Highway, with about half of it passing through Canadian territory.

American firms supplied and shipped 27,000 tons of pipe for the Alaskan portion while pipe for the Canadian territory is being supplied by British firms. The line is being laid simultaneously south from Fairbanks and north from Haines.



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MANAGEMENT RESOURCES

B. F. Goodrich believes itself, basically, a service company, flourishing only as the development of its basic resources serves the American people.

by **W. S. Richardson**
President
The B. F. Goodrich Company

THE basic principle of management which governs the operating policies of The B. F. Goodrich Company is simply this: strive constantly to develop, improve and utilize the basic resources of the company.

We consider The B. F. Goodrich Company to be a service organization, flourishing and growing only as it succeeds in serving the American people. This philosophy dates from the company's founder, Dr. Benjamin Franklin Goodrich, who told his first employees that he wanted to "make goods destined for service."

Our American economy is competitive and dynamic; that means there must be both profit and loss, progress and stagnation, for companies and individuals.

B. F. Goodrich has, over its 85-year history, experienced both profit and loss. But there has been no stagnation. In 1870 it was a partnership with eight employees. By 1880 it was a corporation with six stockholders and 55 employees. Today it has 20,000 stockholders and 42,000 employees. We have progressed because we have been able to make good use of our resources.

These resources can be classed in four groups.

First, and all-important, is our personnel.

Second, our plants, equipment, inventories, investments and cash used in manufacturing and distributing goods, and for staff services.

Third, the good will of our customers, suppliers and the public toward our products and toward our company.

Fourth, that indefinable competitive, creative spark that makes men want to discover, to learn and to grow.

Of course, these resources are inherent to greater or less degree in all companies, large and small. The success or failure of firms depends on how well they can develop and build upon these fundamentals.

Most of us are convinced that the greatest strength of The B. F. Goodrich Company is the high order of our "team play." We have made creditable progress toward becoming a conditioned, disciplined, well-coached and willingly coordinated organization. We are constantly striving to improve further our individual performances, our team play and the organization structure of responsibilities and authorities. We recognize that no one player or any one combination of players can participate directly in every "scoring play."

This is why the trend in our organization structure has been toward decentralization of responsibility with corresponding authority.

B. F. Goodrich is organized into seven integrated divisions. Sales and manufacturing activities have been combined in each division so that it can operate as a separate unit within the framework of Company Policy.

The divisions are the Tire and Equipment Division, the Industrial Products Division, B. F. Goodrich Chemical Company, the Sponge Products Division, the Footwear

and Flooring Division, The B. F. Goodrich Company of Canada, Ltd., and International B. F. Goodrich Company.

Each of these divisions is headed by a president to whom is delegated the management authority and responsibility for operations. In addition, there are several staff "service divisions" of the corporation, each of which has the important responsibility of rendering functional services to the senior administrative officers, to the management of the operating divisions, and to other service divisions.

The contribution to B. F. Goodrich progress by a service division is not in the sphere of direct manufacture and sale of products, but rather in making available specialized knowledge, programs, plans, research, appraisals and auxiliary functional services.

These service divisions are General Counsel, Employee Relations, Controller, Treasurer, Business Research, Public Relations, and Purchasing.

There are four advisory groups to the chief executive officer which meet at regular intervals. These are the Authorizations Council, advising mainly on matters of control, expenditures and finance; Operations Council, on policies and overall conduct of business of the company; Employee Relations Council, on personnel policies and progress; Purchasing Council, on the procurement of materials and supplies.

The company has been organized in this manner because its continuing diversification and growth, both now and in the future, indicates that this form of decentralization is the most efficient method yet devised for the thorough utilization of our resources.

In looking ahead, it has also been

necessary to organize along these lines to permit the training and development of management personnel capable of carrying out expansion of the company's business as opportunity develops.

The B. F. Goodrich team is judged by its ability to provide better products and better values for customers; provide good jobs and opportunity for individual employees; earn a reasonable return for stockholders on their investment; help dealers, distributors, suppliers and others whose success is dependent on BFG progress; contribute the B. F. Goodrich company's share of the cost of federal, state and local government.

As I have pointed out, the most important of our resources is our people. It is the responsibility of every management man to give first attention to the quality of the personnel reporting to him, and to building and keeping the morale at a high level.

Good employees deserve good direction. Good relationships between managers and employees are essential to the aggressive, fast-moving and effective action required to reach our goals of high production and sales, greater relative earnings and more and better-paid jobs.

B. F. Goodrich organization policies place administrative responsibility for personnel direction in the hands of each line manager. The corporate employee relations group, a service division, and the administrative personnel managers within the operating divisions have responsibility for aiding line management with specialized knowledge, counsel and tools. They have no authority over line managers.

It is our policy at all times to use the best tools available and to constantly check to be sure that our tools remain the best. As a result, we are constantly testing, evaluating and exploring. This applies to our products and materials, our manufacturing and sales methods, our advertising, and to our people.

An outstanding example of this policy at work in the field of personnel is a recent survey of employee morale and opinion conducted by an impartial research organization among all non-foremen salaried employees in our

Akron plants. This survey was conceived and conducted so that there would be no reason why each employee shouldn't respond honestly and with complete faith that nothing he said could be held against him.

One important conclusion the survey turned up was that our people are not nearly as concerned over their personal economic relations with the company as they are with the more intangible aspects of their relations with the boss, with fellow employees, with having a good, warm and enthusiastic inner feeling about the importance of the work they are doing, and their personal importance to the company and the job. The survey shows the employees are relatively satisfied with the economic and tangible elements—pay, employee benefit programs, and physical working conditions.

Another important conclusion is that the happiest employees seem to be in the busiest, most efficient operations. This traces directly to good allocation and organization of work, and the matter of bringing to each employee a knowledge of the importance of his particular job and of his personal importance on that job.

The happy employee reflects the manager's personal effectiveness in doing his own job, not only the routine technical duties, but the assumption of responsibility in discharging such other managerial duties as those of maintaining good relations with other departments and managers; foresightedness in his planning and programming; and the use of reason and logic, rather than arbitrary action and snap decisions. Happy employees also reflect the humanness of good management; the desire to know each

employee as a person; to know what his problems, ambitions and motivations are; to show personal respect for his ability and performance; and personal interest in helping him become a better employee.

One of the important areas in which management should be of aid in helping to strengthen employee morale is that of employee benefits. Though B. F. Goodrich straight-time earnings average considerably more than the average of all manufacturing industries, the amounts we spend to provide advanced employee benefit programs are still higher, both absolutely and relatively.

These, of course, are only a few of the ways in which we try to utilize our manpower as thoroughly and efficiently as possible.

Orientation and training programs are provided for all new B. F. Goodrich people. These include lectures, group discussion, individual counsel, work practice and on-the-job training. All basic training is tailored to the particular field of activity the individual is to enter.

We believe that the best training is the kind that never stops. Therefore, throughout the organization, we emphasize continuous training to help people improve on their jobs, and development training to prepare them for bigger jobs while performing the present one.

Putting the accent on promotion within the company—instead of "bringing in" established experts from outside—is a basic policy. A person's potential for advancement is an important factor considered in selecting new people. The rate and degree of advancement are largely up to the individual. Ability and performance are the first considerations in selecting people for

(Continued on page 21)

Our Slip is Showing

The April issue contained a serious typographical error in the article entitled "Army Tests Use of Smoke Screen for A-Protection", in reporting smoke screens might reduce casualties by as much as 5%. This should have read "... by as much as 75% ...". Quoting from a letter received from Major General William M. Creasy, U.S.A., Chief Chemical Officer, "The recent test of TRAC (thermal radiation attenuating clouds) at Operation TEAPOT was entirely successful. An attenuation of thermal radiation in excess of 75% was recorded (the actual figure is classified). This means that, by the use of smoke, the radius of lethal thermal radiation can be made smaller than the lethal radius of blast. There is obviously no point in any greater attenuation. This highly effective screen was put up in a very few minutes using standard Chemical Corps equipment."

Work Smarter— Not Harder



Conference Leader Lee Kann pins blue ribbon on Flow Process Chart, outlining most outstanding project of the current session.

**Advises Ryan Aeronautical Company
San Diego, California**

"WELL, of all things!"

The clerk looked up from the single sheet of paper in her hand.

"You mean this one form will take the place of the 10 copies and 10 envelopes I've always had to type? Why didn't I think of that a long time ago!"

This typical reaction to one of the work improvement projects developed as a result of Ryan's new work Simplification program, expresses both the gratification—and the exasperation—in the new system.

For the best ideas are usually the most simple—and the most overlooked!

"It's amazing how much we take our work for granted," says Robert F. Smith, Ryan's Supervisor of Training and director of the work simplification program. "Work Simp classes are designed to get us all to thinking about how to do our jobs easier—in other words, to 'work smarter, not harder.'"

"We're not interested in work speed up. That usually results in errors—or an accident. But it's surprising how many jobs can be simplified and made easier or safer just by careful examination of each detail and the constant application of

the question, 'Why do I do this task in exactly this way?'"

It's evident after only a few moments' conversation with Bob Smith that he believes wholeheartedly in the "Work Simp" principles. And he has tangible evidence of the success of these principles at Ryan to back up his faith.

"In the first 12 months that Work Simp was in operation at Ryan, proposals from conference committees resulted in a total saving of over \$75,000," Smith points out. And this figure covers only the obvious, invariably conservative, estimate of actual dollars saved. Manhours, delays, miles walked, backaches and personal injuries that were eliminated or avoided are benefits that are just as important in evaluating the program, but are less easy to pin down.

Work Simp alumni report also that other intangibles of the course provide dividends long after they have graduated. For one thing the system provides tools, in the form of process charts, flow diagrams and tested precepts, for giving substance to good ideas which might otherwise evaporate in the sun of procrastination.

Ryan's conservation analysts, charged with awarding a monthly citation to the department making the best recommendation for material conservation, have commended the concise, well thought-out suggestions that result from use of Flow Process Charts by factory supervisors.

Secondly, the very nature of the class sessions, based as they are on the "conference technique," gives valuable public speaking experience to the employees who participate in them inasmuch as they must make committee reports to the group, and are constantly encouraged to discuss freely their own ideas and those of their neighbors.

Specifically then, what is the Work Simplification Program, when did it start at Ryan, and how does it affect the average factory and office worker here?

Allan H. Mogensen who developed Work Simplification Conferences back in 1932, defines the system as "the organized use of common sense by everyone involved to find easier and better ways of doing work." It was the logical outgrowth of the pioneering efforts in time and motion studies by Frank and Lillian Gilbreth (hero and heroine of the best-seller, "Cheaper by the Dozen," with whom Mogensen collaborated until Dr. Frank's death in 1924).

Dr. Lillian, who has continued her husband's work in this field, is a popular and respected member of the faculty of Mogensen's Work Simplification Training Conferences held annually at Lake Placid, New York. These conferences are attended by representatives from departments of industrial engineering, production, personnel and finance in companies large and small all over the United States. Bob Smith is a graduate of the 17th conference, which took place at Lake Placid in the summer of 1953.

As an example of the variety of firms to be found on the Work Simp enrollment list, among Bob's classmates were employees of Swift & Co., Chesapeake & Ohio Railway, Standard Register Co., Columbia Broadcasting System, Detroit-Edison, Minneapolis-Honeywell Co., Ford Motor Co. and RCA-Victor.

Because Mogensen knows that a successful program of any type must have the solid support and understanding of top management, he tries to launch each company's work simplification schedule himself with a special "introduction to executive management." At Ryan, this introductory course was held in October, 1953, for 15 of the plant's highest officers. With their enthusiastic approval and backing, Bob Smith welcomed a pilot group of 20 department heads to the first full-scale Work Simp session at Ryan on December 8, 1953, and the new program was underway. Today, 14 groups of 20 employees each have completed the course of eight two-hour meetings. Eventually all supervisory personnel will have an opportunity to attend the classes and to become familiar with the sometimes astonishing results of "working smarter—not harder."

To see how the system operates, let's follow the Work Simp committee that discovered how to eliminate the 10 unnecessary copies and 10 envelopes, simplifying the job of the clerk in the earlier part of our story.

James Orr of Outside Production was the chairman of the group. Other members were Jack Delaney of Engineering; Charles Webster, Production Engineering and Al Janeski of Dispatching.

In the first two conferences of the Work Simplification course,

these men, along with their 16 classmates, learned the basic objectives of Work Simplification: "To get better products with less effort, in less time, with greater safety, at lower costs" — thereby enhancing the company's competitive position and making jobs and salaries that much more secure. In these sessions the men also considered the advantages of an open mind, with its green light showing, as opposed to the "red light mind" whose immediate response to a new idea is, "It can't be done!"

At session three, Orr's class was introduced to the flow process chart, a sheet now becoming as familiar across the nation as income tax blanks.

Five different symbols on the FPC, indicating transportation, delay, storage, inspection and operation, make it possible to record graphically every step of a job under examination. In short, the Flow Process Chart puts the organization into the "organized use of common sense" and from this point on will be the constant working companion of Work Simp students and old-grads.

In filling out the FPC's, students are shown how to break down a job into its three essentials:

- (1) "Make ready," or the effort and time spent in setting up equipment, machines and materials in preparation for performing a task.
- (2) "Do"—which is the actual performance of the job, and
- (3) "Put-away," the clean-up following the "do."

Analyzing an operation in this manner often pays off immediately with the big jackpot—the realization that there's no good reason for the job in the first place, and all three functions can be eliminated in one stroke.

Conference four gives the New York Simp disciples a chance to put the meat of practice on the bones of theory, applying the flow process charts to actual plant problems. Class members from different departments, with different training and backgrounds, are assigned to committees and asked to select their own project, preferably a "bottleneck"—a job that takes too much time, costs too much, or requires too much chasing around to find materials, tools and supplies.

5TH ARMY WILL USE CIVILIANS IN 1,238 JOBS

Approximately 225 army officers and 1,013 enlisted men in administrative and other support activity assignments will be replaced by civilian employees at 5th army installations in 13 central states, 5th army headquarters announced yesterday. The replacement program is to be completed by June 30.

At Chicago Headquarters 42 officers and 29 enlisted men are to be replaced by civilian specialists. Seventeen officers and 28 enlisted personnel will be replaced at Fort Sheridan. Civilian replacements will be obtained through civil service procedures.

The program is part of "operation teammate," under which 12,000 officers and enlisted men throughout the army are to be replaced by civilians. Previously, 27,000 military personnel have been replaced nationally by civilian employees starting in 1951.

Orr's committee settled on an office task that was performed an average of 26 times a week. It was seemingly an essential operation involving the typing and distribution of a "Closed Short-Shipping Form," used to notify certain departments that for some reason a shipment consigned to Ryan would be closed out with a shortage. For years these forms had been made up as needed, 10 copies at a time, and distributed by a purchasing department clerk. It was a simple, straightforward operation. It took time, yes—but how else could you notify everyone not to expect a full shipment? Orr, Charlie Webster, Jack Delaney and Al Janeski took out their Flow Process Charts and went to work.

They began with the typist taking 10 copies of the form from a cabinet and went on from there as she inserted carbon, placed them in her typewriter, typed in necessary information, and so on through 11 operations, two transportations, one inspection, two delays of 20 minutes each and one storage.

Then the committee carefully studied each detail and, as one member succinctly put it, "Why'd the hell out of everything!"

(Continued on page 18)



ARMED FORCES MANAGEMENT ASSOCIATION

NEWS and ACTIVITIES

INDIANAPOLIS, IND.

Members of the Indiana Chapter, Armed Forces Management Association, proved they were not fools on April Fool's Day. This day was the culmination of months of hard work and they were reaping the harvest. At a Charter Presentation banquet at the Washington Hotel, attended by all members and guests, Colonel Howard H. Cloud, Jr., member of the Board of Directors of the National Association, presented the Chapter Charter to their president, Major Fred Zausmer. In his address, Colonel Cloud eloquently expressed the purposes of the Association and stated, "You can try to force management improvement down people's throats by directive and regulation but it has to start at the grass roots. People have to be sold on the value and necessity of management improvement."

The Honorable Homer E. Capehart, United States Senator from Indiana, guest speaker for the occasion, expressed the need for good sound business management in Government. He stated that the founders of the National Association and the local Chapter should be congratulated for having the foresight in recognizing this need.

In recognition for his efforts in fostering good management in Government, Senator Capehart was presented with the first Honorary Membership in the Indiana Chapter.

Senator Capehart was the first person to receive an honorary membership to the Armed Forces Management Association.

U. S. Senator Homer E. Capehart Receives First Honorary Membership in recognition of his efforts in obtaining better management in Governmental agencies, from the Indiana Chapter, Armed Forces Management Association, by the Chapter President Major Fred Zausmer (left). Colonel Howard H. Cloud, Jr., representing the National Association and Edward Alvarez, Chapter Vice President, are to the right of the Senator.

Management Engineering in the Air Force

by Howard H. Cloud, Jr.

Greatly increased emphasis is currently being placed on the management engineering function in the Air Force. This is due to the many, varied management problems that confront the Air Force in expanding to 137 wings. These are problems of systems, methods, procedures, costs and allocation and utilization of resources—the same ones that management must face and solve from day to day but which are much more acute in a period of expansion.

In Headquarters, United States Air Force, the Deputy Chief of Staff, Operations is responsible for the overall Management Engineering Program. The Director of Manpower and Organization, under the DCS/Operations, is the operating official and his office is the focal point in the Air Staff for the execution of the program. His staff develops, tests and disseminates the techniques and systems used by Air Force management engineers and managers. This staff was recently expanded, increasing the capability (1) to evaluate requests for management engineering consultant services and (2) to provide such

services with staff personnel when possible.

The more important techniques developed include Air Force Manual 25-4 "USAF Work Measurement System," Air Force Pamphlet 25-3-1 "Manpower Management Review," and Air Force Pamphlet 25-3-2 "Work Simplification."

The Work Measurement System is a management tool of real value to the first line supervisor. It relates, on a continuing basis, the volume of work accomplished to the man-hours expended in accomplishing that volume. When installed and operating in a function, the system will (1) identify problems that need to be solved and (2) provide factual information for control and for programming purposes.

Twenty months were spent in the development and testing of the Manpower Management Review before its publication as a pamphlet. It is a procedure for the application of management engineering principles and techniques. Tailored to Air Force requirements, the review can be conducted as a study of a small function, an administrative element, or even a large headquarters. Supervisors can use it to self-analyze their operations. It consists of a series of analyses in this order, (1) mission—to reduce it to essentials, (2) organization—to streamline it, (3) methods and procedures—to improve and simplify them, (4) manning requirements—to develop minimum but adequate manning for average essential workloads.

It has often been said that nothing basically new can be written about work simplification. No claim to originality or anything basically new is made in Air Force Pamphlet 25-3-2. The purpose of the pamphlet is to make work simplification techniques available to and encourage their use by supervisors at all levels; to accomplish this, distribution was made on the basis of one copy for each ten personnel. The techniques are presented in this or-



der (distributing) analy- out st- ation delay was r- Th- quest- servic- addi- torate- tion. ered- ance- in the Th- the f- Mana- Branc- 1955, branc- ment- ing- servic- agem- ect. Th- Branc- tion o- engin- origin- Head- requi- Branc- servic- perso- ment- comb- will l-velop- pabil- for m- sultar- Th- (3) Wher- of ot- and s- requ- Wher- firms- agem- in the Th- Branc- and- from- of M- Amor- ginee- moni- Branc- Th- JUNE

der (1) motion analysis, (2) work distribution analysis, (3) process analysis, (4) work count, (5) layout studies. The five symbol (operation, transportation, inspection, delay, storage) flow process chart was made official for the Air Force.

The sharply rising volume of requests for management engineering services was the primary reason for adding to the staff in the Directorate of Manpower and Organization. This rising volume is considered an indication of wider acceptance of the management engineer in the Air Force.

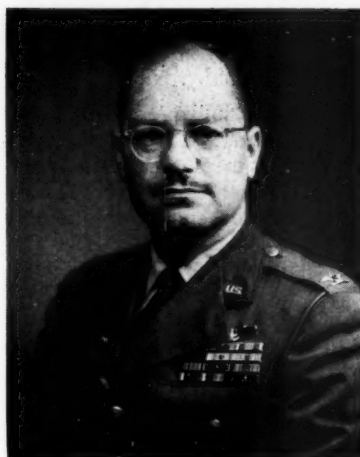
The addition to the staff was in the form of a new Branch—the Management Engineering Services Branch. Established in January 1955, the broad mission of this branch is (1) evaluate requirements for Management Engineering Services, (2) provide such services, (3) monitor all management engineering services projects.

The specific functions of this Branch include analysis and evaluation of all requests for management engineering consultant services originated by, or submitted to Headquarters, USAF. When a valid requirement is found to exist, the Branch will determine whether the services should be provided by staff personnel, an appropriate management consultant contractor or a combination of both. The Branch will have the responsibility of developing and maintaining staff capability to meet validated requests for management engineering consultant services.

There will be 5 teams of three (3) management engineers each. When necessary, technical experts of other elements of the Air Staff and subordinate commands will be requested to augment these teams. When contracts are let with private firms, at least one of the staff management engineers will participate in the study.

The initial workload of the Branch was made up from contracts and projects that were reassigned from other parts of the Directorate of Manpower and Organization. Among the active management engineering projects that are being monitored or conducted by the Branch are:

The installations of a Work



Introducing Howard H. Cloud, Jr., Chairman, Membership Committee, Armed Forces Management Association.

Colonel Howard H. Cloud, Jr., USAF is presently Chief of the Management Engineering Services Branch, Directorate of Manpower and Organization, DCS/Operations Headquarters, United States

Measurement System in USAF depots based on engineered standards; the refinement of accounting, budgeting and financial control procedures; mechanization of base level statistical operations; a cost analysis system for packaging; installation of production control, standard cost accounting and payroll distribution systems in the Directorate of Maintenance throughout Air Materiel Command; base administration.

Of these, "Base Administration" is timely to discuss because of the current interest in government paperwork generated by the recent report of the Hoover Commission. In their report, the commission estimated the cost of governmental paperwork at \$100.00 yearly in taxes to each average family of four persons!

The Manpower Management Review of base administration is being conducted by staff personnel with representatives from the major command, numbered Air Force and base levels participating. Because of the scope of the study, it was divided into four phases. Phase One, "Boards and Committees," has been completed and resulted in the discontinuance of 16 boards out of a total of 48 found at base level. These 16 were performing functions that were considered normal command responsibilities that should

Air Forces. Following in his father's footsteps he has made the military service his career. He graduated from San Francisco City College; successfully completed the Business Administration graduate course in Advanced Management at the University of Pittsburgh; and is a graduate of the Commander's Course, Air Forces Manpower Management Training Program at the George Washington University. He served with the Ninth Troop Carrier Command in Europe during WW II and participated in the invasions of Normandy, Southern France, Holland and the Rhine River crossing. He has received the Distinguished Flying Cross; Air Medal with two Oak Leaf Clusters; Air Force Commendation Medal; Purple Heart; the French Croix de Guerre; Netherlands Orange Lanyard; Presidential Unit Citation and various theater and service medals.

His previous assignments include Deputy Chief of Staff, Tenth Air Force; Base Commander, Atterbury Air Force Base, Indiana; and Air Base Group Commander, Donaldson Air Force Base, South Carolina.

He has chosen as his topic "Management Engineering in the Air Force."

be absorbed by the regular staff. Many of the other 32 are required by Public Law and some are necessary to protect the rights of individuals. An official policy statement to prevent the future appointment of unnecessary boards has been published by Headquarters, USAF.

Phase Two is "Reports," and is now underway. All reports required at the base level—some 300—will be analyzed to recommend elimination or consolidation or to reduce the reporting frequency. Special or "one-time" reports are included in this study and it is suspected that they represent a large part of the reporting workload. Phase Three will cover "regulations and directives," and Phase Four will be "responsibility and authority."

While this review is directed primarily at the base level administrative workload, it is believed that economies will also accrue to the Air Force at higher echelons.

How, one may ask, is the Air Force expanding its capability to provide management engineering consultant services with staff personnel? Also, where will the Air Force get the management engineers, both quantitatively and qualitatively?

Well, we're building a manning standard for the base level manpower and organization shops that

will provide an adequate number of management engineers in relation to the size of each base and its particular type of mission. This will follow the general pattern set by private industry's staffing in this area.

Qualitatively, the Air Force has a dynamic, aggressive program to develop the level of skills needed. There is the base level management training course which is pitched at the first line of supervision. It has a fixed number of entries in each class which was increased in the summer of 1954. Officers are regularly assigned to receive training at the graduate level at selected universities. There is the Commanders' Course at George Washington University which does much to stimulate the interest of commanders in the role the management engineer can play in the solution of management problems and the improvement of operations. A planned system of management engineering seminars was inaugurated last December. The first seminar was held at Keesler Air Force Base, Mississippi, and lasted ten days. The lecturers and group discussion leaders were drawn not only from staff personnel, but from private industry and universities, as well.

To sum this all up, the Air Force Management Engineering Program is designed to develop and make available to commanders the modern techniques of management engineering; to make available to the commanders, when requested, the consultant services necessary to apply the techniques. These actions, we believe, will help the commanders in the accomplishment of their mission.

Alaska via Alcan!

● It has recently been announced that travel by privately owned vehicle to Alaska via the Alcan Highway has been authorized for those personnel desiring this type of travel and who make proper application for it. Reimbursement for this travel will be limited to six cents per mile from the last permanent station in the U.S. to Seattle. Per diem will be computed on the basis of constructive commercial air time from Seattle to the appropriate aerial port in Alaska.

SAC Management

(Continued from page 5)

at the time deliveries of bombers are beginning. They then begin training to meet the performance standards set for combat-ready crews. At the end of six months, the wing is ready for combat and can take its place in the war plans of the Strategic Air Command.

The same sort of programming is used to produce specialized maintenance crews, support personnel of all types, and to insure completion of all necessary physical facilities and the delivery of supply inventories.

The time-span for the production of a ready B-47 wing is 30 months.

Management controls are not relaxed once a wing reaches this stage. It is now in business for itself, and must begin turning out another product. This product is the flying hour.

In producing flying hours for training purposes, the wing commander meets with his Director of Operations, Director of Materiel, and the Chief of Maintenance. The operations officer presents his requirement for flying time to meet the needs of his crews. The maintenance officer forecasts his ability to provide those flying hours, depending upon requirements of scheduled maintenance. A program of flying is agreed upon for a period of 30 days. This program is used by both operations and maintenance to assure an orderly attainment of training requirements for that period.

For each flying hour available, the wing commander must see to it that a maximum amount of training is accomplished. He has the responsibility to see that every crew meets certain training demands and demonstrates the necessary levels of proficiency. He himself is rated on the accomplishments of his crews.

A select B-47 crew—one which has achieved stated levels of all-round proficiency, is required to accomplish a minimum of 60 hours of flying training each calendar quarter. Within that allotted flying time, these three men will be scored on their completion of a stipulated number of bomb-runs using various techniques. Well-defined naviga-

tion requirements must be met. Flight performance, in-flight refueling, formation flying, and pilot proficiency standards must be satisfied.

These are some of the requirements that must be met within the flying time available to the crews. They are listed to indicate the importance of the flying hour—the wing maintenance officer's product—in developing the combat ready wing—which is SAC's product. Proved management controls enable us to get the job done.

Maintenance officers are guided in their production of flying hours by the SAC specialized maintenance system. The jet bombers of today are more complex than the piston-engine bombers they are replacing. We have determined that a crew of specialists servicing these modern bombers yields more flying time than would be possible with general-service maintenance men. No one mechanic can master the intricate systems of a modern bomber. Therefore our maintenance crews are made up entirely of specialists in radar and navigation equipment, electrical and hydraulic systems, jet engines, and so on. All of these men are thoroughly grounded in every phase of their jobs. Their yield of flying hours must remain high.

The work of the specialized maintenance crew is done under a system of man-hour controls. Standard time factors have been carefully worked out for all maintenance jobs. Performance is evaluated against these factors. The system holds each supervisor responsible for the work of the men assigned to him, and for the upkeep of established production levels. It is easy to spot any drop in production under this system, and to take steps to correct it. Also man-hour controls are in turn revised as techniques improve. This permits us to set still higher production levels for the future.

Analysis of reports on aircraft engines has given us another management tool that has saved both flying hours and actual cash for SAC. We have been able to apply actuarial methods to aircraft engines by relating the mathematical probability of engine failure to engine age. The technique is com-

parable to that used by insurance firms in setting their premium rates. This has enabled us to forecast accurately—our engine requirements at any given base, and under given sets of operating conditions. In one year, we were able to save \$1,573,000 on one model of reciprocating engine by calculating the maximum allowable flying time before removing the engine for overhaul. Due allowance was made for the factor of safety. It was just a matter of being sure that engines were not arbitrarily being changed according to an unrealistic standard.

Our technique was adopted by the Air Materiel Command, and its first application was to the problem of procurement of engines for our B-47 bombers. Procurement cut-backs amounting to more than \$100,000,000 were made without jeopardy to our needs in SAC.

Another management project instituted by SAC to cut costs was one called Project "Bench Check." Civilian managers well know the problems of inventory levels. The SAC commander has them too. He must manage a level of supply in thousands of items that will enable him to maintain his aircraft and produce the necessary flying hours. He must also see that these levels are not excessive, and that his multi-million dollar inventory is working, and not idle stock.

When Bench Check was started, it was the custom to send all items removed from aircraft to depots for overhaul. This meant that millions of dollars were tied up in supply items moving to, through, and back from depots. They were also costing man-hours in packing, shipping, and handling along the way. We started specialists checking all these items. They found that most of them were reusable without repair. Some others could be repaired on the base and put back in use. During a two month period on 10 SAC bases, our men checked 100,423 items, valued at \$35,549,742. They found that about 25% could be reused without repair, and \$14,535,795 went right back in service. They repaired about 40% of these items on the base, which meant that \$15,746,248 stayed in local stocks. The remaining 35% representing about one-seventh of the dollar value of the total items

checked, or \$5,267,699, went to the depot for overhaul. This study enabled us to establish more realistic inventory standards, with consequent dollar savings. Bench Check is now an operating procedure throughout SAC.

These few examples show how we have arrived at actual instead of theoretical requirements in establishing a combat wing. During the activation period of a wing, it is a special problem, handled according to its special needs. But once the resources are in place, we put it into our SAC-wide Management Control System.

I stated earlier that the qualities that make a good commander also make a good manager. The military qualities of our commanders are the result of personal aptitudes, experience, and training. To make

them good managers, we train them for this responsibility. Every general and every colonel in SAC is required to take a specialized course in financial management. The course covers every aspect of our special management problems.

Management by dollar standards also has an important place in SAC. We have established realistic dollar standards throughout the command. Performance is measured periodically against these standards. This constitutes a dollar equivalent for the flying hour and the training production the commander expects to return. The responsibility for spending dollars wisely then rests directly on the commander. Comparison of results achieved in terms of production—flying hours and readiness for combat—shows which managers are

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getting the most for the dollars they spend.

It must be realized that the commander's production of flying hours and training is subject to a "break-even point" as is the production of any industry. There is a certain level of fixed costs. Production below this level yields no profit. But above this level, profits increase until additional fixed costs must be added. In SAC, pay of personnel and housekeeping expenses are geared to an expected output in time of war. These fixed costs provide a certain flying hour capability in time of peace. Therefore, we must fly at a certain level of production or fail to get a satisfactory economic return from our fixed costs. We know, for example, that a reduction of 20% from the optimum flying time reduces the oper-

ating cost of a medium bombardment wing by only 6%.

Continuing study of financial data has enabled us to work out standard operating ratios, which are sent out to all bases as yardsticks to measure their activities. These operating statements are accompanied by a command letter, commenting on each subject as seen throughout the command. Each base is then afforded the benefits of findings from all others.

One of the major resources allotted to SAC by the Air Staff is our manpower. We are still building toward the number of combat wings allocated under the 137-wing Air Force program. We will reach this goal with a proportionately small increase in our total manpower. This means that our present manpower resource must be utilized to the fullest possible extent.

Our organizational structure is under constant study. Functional studies of our units are being made, with a view to eliminating overlap or duplication in any activity. One result will be precise understanding of functions, which will speed up the flow of work. Also, we are constantly training all our personnel, through seminars, base management indoctrination course, Non-commissioned Officer Academies and technical ground schools. We expect to raise the individual efficiency of every person in the command, in order to meet our full-strength goal within our personnel allocation.

I am sure that our growth will not end with the attainment of our full authorized combat strength. Efficient management controls and the indoctrination of our people will bring about a continuing growth of the profit yield of the Strategic Air Command—and thus greater security for our Nation.

Work Smarter

(Continued from page 13)

Why is the job done? Why is it done in that place? Why at that time? Why by that person and in just that way?

Can the whole procedure be eliminated? Can details be combined? How about changing the sequence, place or person? Is there a better method of tackling the job?

Jimmy Orr and his committee tried hard to answer every question. It was the answers they *couldn't* find, however, that interested them most, for they had already learned that the troublesome "whys" led the way to expendable details.

Nevertheless, they didn't stop with the paper work. Next came the important "consultative approach." They asked for opinions from everyone concerned—the girl who handled the forms day after day and knew the job best, the department head, the people who received the forms at the other end of the line.

And then, maybe because they were outsiders with that objective viewpoint that distinguishes the forest from the trees, they came across a second form, used regular-



L. to R.: Dr. Paul A. Volpe, Dean, School of Commerce and Finance, Seattle University; A. M. Bledsoe, Rear Admiral, U.S.N.; Mr. Thomas J. Bannan, President, Western Gear Works; Mr. William E. Boeing; The Honorable Governor Arthur B. Langlie and the Very Rev. Albert A. Lemieux, S.J., President of Seattle University.

BOEING HONORED BY SEATTLE UNIVERSITY

William E. Boeing, founder of the Boeing Airplane Company and winner of the Guggenheim award in 1934, was honored by Seattle University this month (April 20th) when he was given the university's 1955 Economic Statesmanship Award for his "contribution to the strength of our nation in war and peace." Presentation was made at a luncheon with Thomas J. Bannan, chairman, board of regents of the university and president of Western Gear, acting as master of ceremonies.

Speakers included Bannan, Arthur B. Langlie, governor of Washington; Allan Pomeroy, mayor of Seattle; William E. Allen, Boeing president; Rear Admiral A. M. Bledsoe; Very Rev. A. A. Lemieux, S. J., president of the university, and Dr. Paul A. Volpe, of the university's school of commerce and finance.

Boeing's interest in aviation began in 1915 as a hobby and eventually grew into the world-famous Boeing Airplane Company. He was born in Detroit and is a Yale graduate.

ly by all the same people, called the "Purchase Order Notice." Why not eliminate the first form, treat shortages as a "change" and add the information to the list of items already being routed to interested departments?

Simple? Of course. Good ideas usually are.

Here's another example. Chairman Fred Rathert, Larry Larson, Kenny Dearing and Milt Johnson noticed that after the assembled Ryan Firebee drone missile was painted, it was necessary for two men to round up a dolly, load on the Firebee and haul it a distance of 4,906 feet to the infra-red drying lights. They suggested the lights be permanently moved to the Firebee building instead. Although this was not entirely an original idea—many people had vaguely wondered why it couldn't be done—it was the first time organization had been applied to this particular bit of common sense. "Presentation of the idea is complete and convincing," reported Don Walker, the conservation analyst assigned to assay the worth of the suggestion. "Production man-hour savings will be in excess of \$1300."

Still another group, composed of Ray McCollum, Eddie Oberbauer and Maurie Boles, worked out a method of using a template for trimming and burring fuselage skin.

The old way took two men an hour and a half to clamp the skin in place over a fixture, scribe the cutting lines and then shear by hand. Using the McCollum-Oberbauer-Boles template, the job can now be done with a hand routing machine more accurately and with less waste metal in 15 minutes.

Most workers want to know right away, "What happens when so much time is saved? Will someone lose his job?"

Let Bob Smith, who is familiar with every Work Simplification project put into effect at Ryan, answer that one.

"There has never been a case at Ryan where a worker lost his employment due solely to the installation of a Work Simp way of doing a job.

"In fact, in every instance where wasted time, energy or materials are conserved, with resulting in-

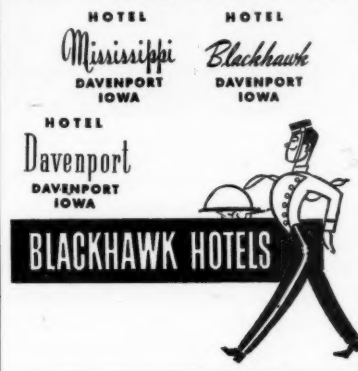
Headed for the Rock Island Arsenal?

Then it's Davenport, Iowa for the best in hotel accommodations. Only five minutes from the Rock Island Arsenal. Three fine hotels to meet any budget requirement or desired accommodations.

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Under direction of the Blackhawk Hotels Company, Davenport, Iowa.



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creased productivity, we are actually strengthening our own positions and jobs in the company. By improving the way we work, thus making more products at less cost, we help Ryan gain a good reputation with our customers, and make it possible for Ryan to bid successfully on new contracts. And that adds up to steadier employment for all of us!"

To keep the Work Simplification program going at a smooth clip at Ryan, Bob has trained two additional conference leaders. They are Dave McLees, Training Department coordinator, and Lee Kann, industrial engineer from the Factory Methods Department, both members of the original pilot group of 14 months ago.

In conducting the 112 conferences held so far, these three men have originated many innovations which give a special Ryan flavor to the course.

In the opening sessions, for example, three methods of getting re-

sults through people are discussed—the approaches of "Tell Them," "Sell Them," and "Consult Them."

"Most good supervisors use all three of these methods at some time or another," Dave McLees explains, "but we found that the advantages of the 'consultative approach' really stick in their minds when we dramatize them.

"We select two members of the class to play the parts of supervisor and a tool crib lead man. The supervisor is trying to get the lead man to install a new system of checking out and storing tools. Before class, each man is given a list of facts to guide him in his characterization. For instance, the lead man is told that all foremen like him, that he has been doing a good job, that the old system has worked smoothly for many years.

"The supervisor is given this picture, too, but his fact sheet also tells him that the new system he is trying to sell is well worth while and will save the company money. Then we let the two of them go at it!"

"The explicit, thought-provoking situations that arise out of these short sketches are more helpful than a whole library of text books," Lee Kann agrees.

Dave and Lee spend much time between sessions as advisors and trouble-shooters for the groups engaged in Work Simp projects. They also contribute anecdotes, success stories and news items for the spritely, two-page "Do," which is edited by Lee and distributed regularly to current and former Work Simp apprentices throughout the plant.

Another Ryan innovation is the award of prizes to the three committees whose projects have been selected as the most outstanding in their group. Chairmen outline their recommendations and receive the awards at the fourth meeting of the succeeding course—a deliberate and highly successful stratagem since this is the half-way mark in the classes and the new students are just learning how to use their Flow Process Charts. They are glad to hear concrete evidence of the remarkable way in which Work Simplification actually produces results.

"In fact," Bob Smith says with satisfaction, "Work Simp fame has now spread beyond the plant. San Diego's City Manager and the Director of the San Diego County Public Welfare Department have asked if they can send over representatives to sit in on Ryan's Work Simp conferences. We told them to come right along . . . there's no limit to the scope of Work Simplification."

"One of our students even applies its principles at home on a job he performs frequently in connection with his three months' old son. He reports a definite upgrading in his efficiency — with a corresponding decrease in the loss of safety pins!"

Industry's First Research Reactor Being Developed

With industrial participation in nuclear energy encouraged by the constructive revision of the Atomic Energy Act, the nuclear reactor promises to be a necessary, modern tool for research into almost all industrial fields.

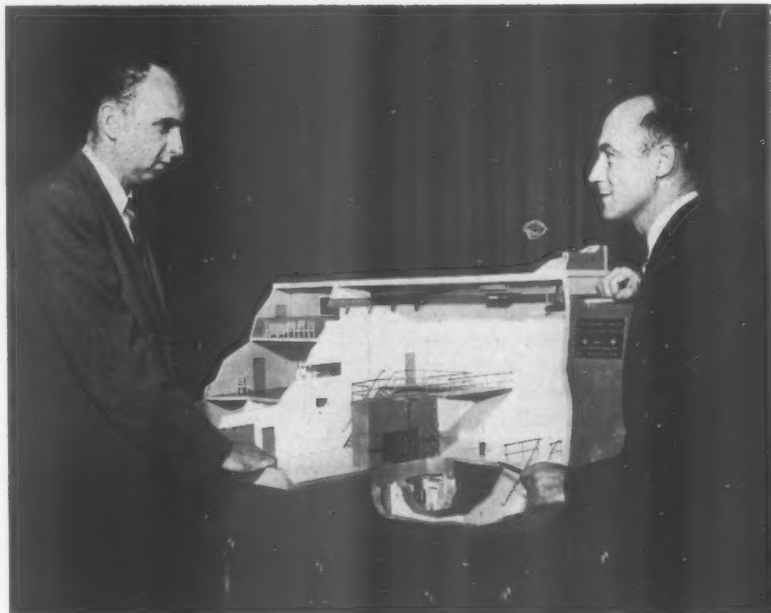
Recognizing the tremendous potentialities of peacetime nuclear energy, Armour Research Foundation of Illinois Institute of Technology, initiated plans for the establishment of a research reactor at its 110-acre headquarters on the south side of Chicago, close to the large industrial community it will serve.

The reactor, to be built by North American Aviation, Downey, Calif., is the first nuclear reactor to be established specifically for industrial research.

Since the solving of industrial problems is the major aim of the ARF reactor, industry has been invited to join the Foundation in construction of the reactor and its facilities under a schedule calling for completion by the end of 1955.

The Armour Research reactor will be free of all restrictions not called for by technical common sense. Programs on the reactor will carry no security regulations, no competition from military applications, no secrecy of any kind other than that called for in the protection of the individual sponsor's programs.

Installation is being planned with a maximum of flexibility and diver-



North American Aviation scientists, Dr. Robert Loftness, left, and Dr. Harry Pearlman, discuss a model of the first nuclear reactor for private industrial research which the Armour Research Foundation plans to operate in Chicago.

sity of application. The reactor will be accessible to Armour Research Foundation sponsors within the limits of safety precautions, just as any other research instrument is handled at the Foundation.

Fuel for the reactor will be obtained from the Atomic Energy commission on "extended loan"—as required by law. Armour Research Foundation will be held accountable for its use and disposition. The fuel will be granted only after full approval is made by the AEC of the design, building plans, schedule of operation, and especially the health safeguard program.

Although nuclear reactors fundamentally are safe devices, special precautions have been included in the design of the ARF reactor to contain all radioactivity safety. The core and its plumbing are designed to avoid leaks, and will be surrounded completely with a secondary metallic envelope. Finally, the reactor itself will be housed in a completely gas-tight room.

(There is no possibility that the reactor could function as a bomb and explode.)

The reactor installation is designed for use in almost every field of industrial research. There is virtually no branch of technology in which neutrons and gamma rays will fail to make a contribution.

The neutron, one of three essential components in all matter (the other two are the proton and the electron), is electrically uncharged and penetrates matter with considerable ease. It is found only in the nuclei of atoms, and to separate it from these nuclei a considerable amount of energy is required.

The reactor also will permit peripheral studies in power reactors; structural studies in organic and inorganic chemistry; trace element determinations, and new medical applications — since literally hundreds of diagnostic and therapeutic techniques depend upon radioisotopes.

With several atomic power plants now under construction in this country, and with a contemplated spread of research reactors similar to that at Armour Research Foundation, atomic energy has begun to justify its much-heralded claim as a boon to mankind.

The amount of paint required to cover completely a battleship the size of the USS MISSOURI (BB-63), would be more than enough to take care of a fence 5 feet high and 273 miles long.

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Resources

(Continued from page 11)

better jobs. There is no limitation on advancement. Obviously not everyone becomes a top executive, but the field is open. Possibilities are not restricted to the particular division in which a man happens to be. "Cross streaming" between divisions, for development and advancement, is a common practice.

The process by which B. F. Goodrich utilizes its other basic resources can be defined broadly in one word: research. By following an aggressive, continuous policy of research and development, the company has been able to fulfill its obligations to its customers by bringing about a constant flow of new and improved products. The sale of these products has enabled the company to grow and to develop, to make more and better paid jobs, and to create and keep public good will.

This continuous policy of research and development has led the company to success in one field after another. B. F. Goodrich manufactures a great variety of rubber products, of course. It is also extensively engaged in the fields of man-made rubber, plastics, chemicals and textiles—even in the manufacture of aircraft wheels and brakes.

Much of this product diversification and research stems from the traditional attitude of B. F. Goodrich management in considering the company primarily as an organization designed to serve the American people. In early years, the company developed and manufactured such articles as fire hose, bicycle tires, elastic bands, dolls and toys, hot water bottles, nipples, surgical goods and hundreds of other items, while many other rubber companies concentrated on the production of a handful of products.

Only the very nature of rubber itself limited the applications of this material to the company's early list of products. Crude rubber deteriorates rapidly when it comes in contact with oil, grease, gasoline and even water and sunlight. It is sticky in warm weather and hard and brittle in cold weather. The vulcanization process by which rubber is cured takes a long time,

limiting the speed at which rubber products can be produced.

To explore the problems of the properties of rubber, B. F. Goodrich in 1895 established the first American research laboratory in the rubber industry. This laboratory's efforts were stimulated almost immediately by the birth of the automobile. B. F. Goodrich had evolved and produced the tires for the first automobile offered for sale in the United States simply by building a bigger, better and stronger version of its bicycle tire. But the relatively high speeds of the "horseless carriage" soon made it apparent that the rubber industry would have to develop completely new types of tires designed to meet the specific needs of the auto. The unprecedented demand for tires by the thousands—later by the millions—underscored the inadequacy of the slow process of producing built-up bicycle tires for the mass-produced automobile.

The new company laboratory's first major achievement was the discovery of organic accelerators which cut the time of vulcanization to one-fourth its original cycle. This discovery meant that tires could be produced cheaply and rapidly enough to keep pace with ever-increasing automobile production. It has been estimated that these accelerators alone are responsible for saving American motorists 100 million dollars a year. Later the B. F. Goodrich laboratory introduced the use of carbon black to give increased abrasion resistance to tires. Age resisters which help rubber fight off the deteriorating effects of weather were also discovered in the company's research laboratory.

Meanwhile, the instability of supply and price of crude rubber grown by foreign producers spurred the company's scientists to seek a

way of creating satisfactory rubber from raw materials produced in the United States. Researchers had succeeded as early as 1910 to produce a kind of man-made rubber. This particular material, however, held little promise at that time of being able to come up to the standards of plantation rubber, and early research was not extensively pushed. But as the need became greater for special types of gasoline-resistant rubber, the company redoubled its research efforts to make a rubber which had these important properties not found in crude.

Over a period of years, the company scientists worked full time on this program. Even during the lean years of the '30s, when dollars for research were hard to find, the quest went on. The first tangible indication of success came in 1937 when B. F. Goodrich opened the first pilot plant for the production of butadiene-type man-made rubber. Soon small quantities of man-made rubber were actually being sold. Two types of man-made rubber—one suitable for tires, and another with the oil-resisting properties lacking in crude—went into production in the Fall of 1939.

One dramatic climax to the years of rubber research was reached on June 5, 1940, when B. F. Goodrich introduced the first passenger car tires containing any substantial amount (actually more than 50 per cent) of man-made rubber. This was the first practical demonstration that rubber suitable for automobile tires could be produced within the boundaries of the United States. In Washington, nine days later, John L. Collyer, then president and now chairman of the board of B. F. Goodrich, urged the Senate Military Affairs Committee to finance the building of man-made rubber plants as life insurance for this nation. He offered all B. F. Goodrich processes and know-how. This series of events assumed historic significance in terms of national security only 18 months later when the Japanese cut off our crude rubber supply from the Far East.

B. F. Goodrich's early work on man-made rubber gave America a running start on the construction of the vast rubber-producing facilities financed by the government

ARMED FORCES MANAGEMENT extends anniversary greetings this month to:

Corps of Engineers	16 June 1775
Adjutant General's	
Department	16 June 1775
Finance Corps	16 June 1775
Quartermaster Corps	16 June 1775
Signal Corps	21 June 1860
Army Chemical Corps	28 June 1918
Military Air Transport Service	1 June 1946



Maj. Gen. Dan C. Ogle (left), Surgeon General of the Air Force, inspects the new insignia worn by Air Force Physician Lt. Ernest H. Teagle while a medical flight surgeon, Brig. Gen. Otis O. Benson, Jr., looks on.

New Medical Badge for Air Force

A new medical insignia design has been developed and approved for use by Air Force Medical Service physicians and dentists in the near future.

Major General Dan C. Ogle, Surgeon General of the Air Force, announced that the new insignia will enable AF doctors and dentists to be identified more readily. Flight surgeons will continue to wear their wing insignia.

The insignia is a small silver badge with a caduceus, or serpent, entwined on a staff and mounted in its center. The dental badge is identical to the one to be worn by physicians except for a "D" superimposed on the caduceus. The badge will be worn above the left breast pocket. The use of the serpent as a medical symbol dates back to the 13th century, B. C., with the tradition of Aesculapius,

New Air Force Medical insignia soon to be worn by Air Force Doctors and Dentists.



who is recognized as the Father of Medicine.

The distinctive new insignia was developed by the Heraldic Section of the Air Force under the guidance of Brigadier General Otis O. Benson, Jr., a flight surgeon with the AF Medical Service.

The badge is not in production as yet. It will be several months before exact specifications are released to manufacturers.

and built by private enterprise during the war. For many months during those dark days of 1942, the B. F. Goodrich plant at Akron was the principal source from which butadiene rubber could be produced. From this plant came the know-how to build almost overnight the plants that made it pos-

sible to keep our war machine rolling. A leading government official has since said that the creation and production of man-made rubber was a greater contribution toward winning the war than the development of the atomic bomb.

Man-made rubber since the war has become an integral part of our

way of life. It has also given us national security in rubber to the point where we no longer need fear under any conditions a repetition of the desperate rubber shortages of the '40s.

Since the war, scientists have continuously worked to improve the types of known man-made rubbers and to create new ones. Early in December of 1954 scientists of Goodrich-Gulf Chemicals, Inc. (owned half by the Gulf Oil Corporation and half by B. F. Goodrich) succeeded in reproducing the true molecule of crude rubber. This was a major scientific achievement.

Based on the best estimates that can be made at this early stage of development of the discovery, the cost of the new material in commercially important volume will be substantially higher than the present price for GR-S rubber, the general purpose man-made rubber used extensively for passenger car tires.

Although the new material can be used to replace crude rubber, the fact that it can be made will not obsolete rubber plantations. This is true because tree rubber can, on the more efficient plantations, be produced for a much lower cost than the currently indicated cost of the new man-made rubber. However, the new material when in production will in effect place a ceiling on the price of crude rubber.

GR-S rubber continues to be a very valuable material and is better for many uses than crude. There is an area of usage including truck and airplane tires which today account for about 30 per cent of the total annual tonnage of new rubber consumed in the United States—where crude rubber is still the preferred material.

GR-S in tires under heavy loads generates more heat than crude rubber, freezes at higher temperatures and in its uncured state is not as tacky, or sticky, as crude rubber. In all tests made to date the newly discovered man-made rubber possesses the physical characteristics of crude rubber even to tack and stickiness.

Although the new material is made from different materials than those used in GR-S and cannot be produced in the government-owned synthetic rubber plants, it

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will not affect disposal of these plants to competitive enterprise. Goodrich-Gulf Chemicals, Inc., has agreed to purchase two government-owned synthetic rubber facilities in Port Neches, Texas. These include a 90,000-ton GR-S copolymer plant now operated by G. F. Goodrich Chemical Company, and a half interest in a 197,000-ton butadiene plant, at present operated by Neches Butane Products Corp.

B. F. Goodrich built for the government two copolymer plants at Port Neches, now having a total rated capacity of 180,000 tons, and has operated one of the two plants continuously since 1943. This — which represented the largest share of the construction and operation of the government-financed man-made rubber plants during the war — was brought about by the company's pioneering work in developing man-made rubber.

Another type of man-made rubber, called butyl, made possible what we consider to be the most significant postwar automotive product: the tubeless tire. Butyl rubber retains air as much as ten times better than the best grades of crude rubber. It came into use after the war in inner tubes. But, more important, it was found that a very thin layer of this rubber could be built into a tire to enable it to hold air satisfactorily without an inner tube.

The tubeless tire was the realization of a 50-year-old dream of rubber engineers. The elimination of the inner tube brought about unprecedented blowout protection. Because the butyl rubber lining is a part of the tire itself, it cannot, under bruise blowout conditions, explode with a sudden force of an inner tube. Most blowouts start with a bruise. A slow leak, rather than a sudden burst, results. Also this development made possible a layer of special gummy rubber underneath the tread, so that the puncture-sealing tubeless tire can automatically seal its own punctures as they occur.

In 1947, however, even though we had succeeded in producing the first practical tubeless tire for passenger cars, the decision to manufacture this revolutionary product was one that was considered care-

fully with full knowledge of the impact its introduction could have upon the motoring public, the automotive industry, the rubber industry, and The B. F. Goodrich Company. We knew that once we decided to go ahead with the tubeless we would be putting ourselves in the position of being forced into making more and more decisions.

For example, our production and marketing of the tubeless tire on a national scale could very well be a major turning point in the rubber industry. We had to decide at the very outset whether B. F. Goodrich would be ready to assume the leadership.

Also, the new tire would bring about new manufacturing and investment problems and new training programs. We had to consider the effect of springing on our 30,000 dealers and distributors ideas and procedures in selling and servicing tires that differed from the

50-year-old standard way of doing business.

Bringing the tubeless tire from the engineering laboratory into production meant tying up a large number of technical people. In addition to investments for new machinery which conceivably could have been partially recovered, we were faced with the possible loss of vast sums in manpower and morale if the tubeless tire did not prove successful.

Before making the basic decision to produce the tubeless tire, we studied as carefully as possible every aspect that the decision would involve. We announced in May of 1947 that B. F. Goodrich had succeeded in developing the tubeless tire. Then our business research department conducted a thorough study of what the public thought about the idea. Our Cincinnati district was selected as a test market and the new tires were introduced for sale there in 1948.

We learned in Cincinnati the answers to such questions as price, advertising, sales expectancy and dealer relations. This was the first time a tire had ever been introduced in this manner. When, after several years of marketing, the tubeless tire proved to be outstandingly successful, the decision to start mass production and national distribution was made.

B. F. Goodrich has manufactured and sold more than 5 million tubeless tires and the company holds the basic patents.

The soundness of the decision in 1947 to produce tubeless tires was resoundingly underscored late last year when virtually all the automobile manufacturers adopted the tubeless tire as standard equipment on 1955 models. During the coming year, it is estimated that about 50 per cent of all tires sold for replacement purposes will be tubeless. B. F. Goodrich is currently devoting 75 per cent of its passenger car tire manufacturing facilities to tubeless tires. The company also manufactures tubeless tires for aircraft, farm equipment and light trucks.

Development of chemicals needed in rubber manufacturing led to another basic decision which — like the tubeless tire decision — has had a great effect on the company, its employees, stockholders and

1st ¼ Lockheed Profits Total Some \$4,600,000

Lockheed Aircraft Corporation profits for the first 1955 quarter should total about \$4,600,000, approximately comparable to earnings in the same 1954 period, President Robert E. Gross reported at the Burbank, Calif., company's annual meeting of stockholders (May 3).

Reviewing 1954 as the best period of sales and earnings in Lockheed history, Gross announced that first quarter earnings in 1955 would be within about \$200,000, or 4.2 percent of first quarter earnings last year. This result was obtained, he pointed out, despite a decline in sales from \$216,300,000 for the quarter a year ago to about \$190,000,000 in the first three months of 1955.

The ratio of earnings to sales rose from 2.2 percent to 2.4 for the respective periods, Gross said.

Backlog for Lockheed's three divisions totaled \$1,085,000,000, compared with \$1,295,000,000 a year ago, even though production volume on several models of aircraft has been running at a record high peak. Commercial backlog approximates \$170,000,000, 16 percent of the total.

customers. This was the establishment of B. F. Goodrich Chemical Company, a division, which since the end of World War II has grown to be one of the nation's leading chemical organizations, supplying chemicals, and plastic raw materials to other industries.

Outstanding among its developments in the past year is work in the fields of processing high-impact rigid vinyl plastics, vinyl foam, new synthetic gelling agents, poultry feed additives, new color pigments, the use of a recently discovered basic insecticide as a moth-proofing agent, and new advances in the application of chemicals to upgrade textiles and paper.

The introduction of the first cord automobile tire in America, the "Silvertown," plus other developments in fabrics and cords for hose and belting, brought about the company's decision to acquire a textile factory, the first step in the company's large textile production.

The large and fast-growing vinyl resin industry started as a research project at B. F. Goodrich in 1926. Development of the first polyvinyl flexible materials—known today under such trade names as Koroseal and Geon—led to new factories and hundreds of new products.

So many new and income-producing ventures have sprung from B. F. Goodrich creative achievement that the company looks forward to even greater heights of accomplishment in the years ahead. Through its management attitudes, the company is in a constant state of alertness to turn the challenges of tomorrow into the rewarding opportunities of the future.

As examples of what management is doing to prepare to meet future needs, in 1954, alone, a new chemical plant for the manufacture of acrylonitrile was substantially completed by B. F. Goodrich Chemical Company, in Calvert City, Ky., at a cost of \$8,500,000. A new plant of the Industrial Products Division was opened at Salem, Indiana. A \$9,500,000 expansion of the company's present tire and tube manufacturing plant at Oaks, Pa., was completed last year as was a \$4,000,000 expansion of the company's tire and tube plant at Tuscaloosa, Ala.

B. F. Goodrich last year acquired

the Sponge Rubber Products Company of Connecticut and organized it into an operating division of B. F. Goodrich. Less than three months after acquiring this pioneer sponge company, B. F. Goodrich announced an expansion program designed to double the division's output of latex foam sponge rubber.

In 1954, the company also opened large merchandise distribution centers in Columbus, Ohio, West Springfield, Mass., and Philadelphia, Pa., bringing to 13 the number of major distribution centers established coast-to-coast by B. F. Goodrich since 1950.

In the next five years, the company plans to invest \$100 million for new and improved facilities.

Last year, too, B. F. Goodrich negotiated a long-term concession with the Liberian government involving two separate areas totaling approximately 600,000 acres for growing crude rubber. This will be the first time that the company has engaged in rubber growing on a commercial scale.

The company now has 34 factories in the United States and Canada, and affiliated companies in Mexico, England, Brazil, Japan and Cuba. In addition to more than 500

Electronic 'Brain' Thinks for Pilot

Pilots flying faster than sound can't think fast enough to keep up with themselves.

They need electronic computers to solve their navigational and other technical problems while in flight. But, until now, such electronic "brains" have depended on vacuum tubes which require comparatively large amounts of power and go out of order easily. When that happened, the pilot was left, so to speak, in mid-air.

Promising to solve the difficulty is a new type electronic thinker developed by Bell Telephone Laboratories in collaboration with the Air Research and Development Command.

The new computer uses tiny transistors—nearly 800 of them—instead of vacuum tubes. Transistors are small but tough and get along on about one-twentieth of the power input required by vacuum tubes.

company-owned stores in the United States, thousands of dealers and distributors throughout the world market B. F. Goodrich products.

With sound, progressive management principles applied to the vital areas of personnel, research, plants and equipment, B. F. Goodrich is everlastingly preparing to meet its new responsibilities, to produce more and more "goods destined for service." Only in this way can present standards of living be maintained or improved as our population continues to expand rapidly. This is a course of action that will provide not only a sound domestic economy but will, as proved in past emergencies, become a bulwark of our national security.

H. V. McNamara, president of National Tea company, Chicago, said the chain food store industry is intensifying its training of young employees to prepare them to meet the problems of the growing industry.

In an address at the annual meeting of the National Association of Food Chains he said many specialized jobs have resulted from the transformation of the corner grocery to the modern one-stop supermarket and the demand for trained personnel will grow.

"Specialists in merchandising, sales management, purchasing, warehousing, transportation, real estate, store maintenance, personnel, public relations, accounting, and administration are going to be needed," McNamara said.

"These specialists are going to need retail store background to do the job better and combat intensive competition for the customers' food dollars."

McNamara said it is good logic to assume that operators of the finest food chains in future years are going to be found among the ranks of today's store clerks.

"We must train, educate and prepare the younger people in our business for the problems of tomorrow," he said.

McNamara pointed out that the association is promoting a college training program whereby member chains will award scholarships to selected representatives for the study of marketing, merchandising, and distribution at Michigan State university.

"In addition we have a number of training-on-the-job projects under way and hope to further our efforts in this direction," he said.

Global Marketing Management

THE Coca-Cola Company and its subsidiaries have the distinction of dealing in more countries at one time and on a larger scale than any other single trade-marked product in world history. Yet everywhere you find Coke, you find it is a local enterprise. With very few exceptions, the bottling plants are locally owned and locally operated—and then there is local management. The whole business structure is often compared to a pyramid, because The Coca-Cola Company and its suppliers take a small share from the top, the bottlers and their suppliers take a larger middle share, and the dealers responsible for retailing our product take the largest share at the broad base of the business. Undoubtedly, this working democracy, this business commonwealth wherever Coca-Cola goes on sale, has contributed immeasurably to the acceptance of our product everywhere.

In an age of product diversification and new models year after year, it is something of a phenomenon that The Coca-Cola Company has confined its energies to the production and promotion of one single article of merchandise. The only thing The Coca-Cola Company manufactures is the syrup, or concentrate, necessary to make the finished product. The final packaging is completed at the local bottling plants, or when dispensed by the glass, at the local soda fountains.

Soda fountains were the first outlets for Coca-Cola. There were only eight of them in the whole State of Georgia the year the company was formed, and they were the ornate marble structures made popular by the Centennial celebration in Philadelphia in 1876. But the friendly get-together, sociability, and good talk associated with soda fountains has an ancient origin. For centuries, people in all parts of the world have travelled to the hospitable natural springs, or spas, to "take the waters" charged with the healthful carbonation. Clean, crystalline, effervescent, it was not until the Eighteenth



By H. B. Nicholson,
President, The Coca-Cola Company

Century that an English chemist, Joseph Priestley, was able to duplicate the natural product of the famous watering places by mechanical means. Townsend Speakman, a Philadelphia pharmacist, is accredited the pioneer of the modern soft drink industry. Early in the Nineteenth Century, he improved the methods for manufacturing carbonated water. He added fruit juices and sugar to his carbonated water to make it more palatable. Other pharmacists followed suit and, by the middle of the Nineteenth Century, the public demand for soft drinks warranted a separate section in the corner drugstores. In those days, soft drinks were called "soda waters" and soda fountains were called "spas." They still are in certain parts of the country.

Coca-Cola came into the picture as late as 1886. It was a Georgia-born product. The first mixture of Coca-Cola syrup was compounded in a kettle in the garden of an antebellum home in Atlanta. The first drink of Coca-Cola was served from the soda fountain of an antebellum pharmacy near historic Five Points. There was a time when the company's entire assets, liquid and otherwise, rattled down Peachtree Street in a one-horse wagon. Perhaps the Southern exposure of these beginnings is responsible for the continued persistence of the soft answer in the Coca-Cola business. At any rate, it is traditional with us. We have been soft spoken about our soft drink from the beginnings—though not overlooking, of course, the hard money.

Americans have never accepted seriously the dictum of Ralph Waldo Emerson. They just are not content in the belief that "the world will beat a pathway to your door" for a better mousetrap, or anything else. Historically, they are conditioned to taking to the "open road" and "telling the world." The continental drummer went out in the wilderness and cornered customers in their rustic cabins and American advertising has followed that "go-getter" tradition of the frontier.

Only twenty-five gallons of Coca-Cola syrup were sold the first year of the business, yet forty-six dollars piled up in advertising costs. The expenditure was considerably out of proportion to sales but, today, we like to discount the financial advisability of the act, and look back on it as an expression of faith in what was to become the most widely advertised trademarked product in the world. We believe that product "had to be good to get where it is," of course. Indeed we have said just that in certain of our advertisements for Coke. We have never allowed its inherent goodness to divert us from the appropriations necessary for "telling the world."

One of the earliest advertisements for Coke was an oilcloth streamer designed to pin prominently on drugstore awnings. It contained the words, "Delicious and Refreshing" and, as you undoubtedly know, we still use them to describe our product. The concept of sociability with the drink was there from the start. Our ads have always shown healthy and wholesome individuals enjoying happy moments of relaxation with Coke. To extend the selling season beyond the traditional and good old summer time, we developed the theme of Thirst Knows No Season. It helped to make the entire soft drink industry a year-round industry.

Economists struggle with the shifting boundaries of "class markets," but for Coke there has always been just one market—the market, people everywhere. For years, we have pointed out that fact in one of our ads: "Whoever you are, whatever you do, wherever you may be, when you think of refreshment, think of Coca-Cola — for

Coca-Cola makes any pause, the pause that refreshes, and ice-cold Coca-Cola is everywhere." We have reiterated that theme in magazines, newspapers, highway signs, and point-of-purchase lithography, radio, and more recently television. As the means of communication for reaching more and more people have developed, we have made the appropriations necessary for telling more and more people about our product.

One aspect of our business that forever brightens everybody in it is the absence of any definable saturation point now and in the future. There is just no telling how much Coke a customer can drink in an average lifetime. If we were selling automobiles, or pianos, or tombstones, our statistical associates could readily calculate the probable per-capita consumption. But Coke defies any such calculation. The moment a customer quenches his thirst with one drink he is in the market for another drink. Just when he buys depends on when thirst overtakes him again and whether we're there to remind him to drink Coke again. Some individuals get thirsty oftener than others. Since 1886, we've been doing everything we possibly could to get Coke to them. It took us until 1944 to sell the first billion gallons of syrup. We sold the second billion gallons by the start of 1953. In other words, we did in the past nine years what it took us the previous fifty-six years to do. Do you have any idea how many drinks of Coke two billion gallons of syrup is? Well, it takes an ounce of syrup to make one drink and there are 128 ounces to a gallon, so that means 256 billion drinks. And there are something like two-and-a-half billion people in the world. Why, we haven't even scratched the surface yet. I tell you, Mr. Chairman, this business of thirst is out of this world. And the hurly-burly of modern life makes the needed rest-pause more and more necessary all the time.

"Host to Thirsty Main Street" is a poetic turn of phrase more indicative of where we have come from, rather than where we are now, and where we're going in the future. "Main Street" is typically American in its connotations and, by the turn

of the Century, Coca-Cola in bottles had carried our product considerable distances from the proverbial thoroughfare. You could enjoy it on a picnic, or while cruising down the river on a Sunday afternoon. It was popular at the beaches and our ads were quick to capitalize on the bathing girl motif. The beautiful sea, the bicycle races, the ball parks—Coca-Cola in bottles followed the crowd. Bottles extended our business beyond the reach of soda fountains. Year after year, the number and types of dealers selling Coke has increased until, today, there are more than one hundred forty thousand fountain outlets and more than one and a half million bottle outlets in the United States of America alone.

People like Coke. And we like getting it to them. Within arm's reach of desire is our goal, wherever people are. The increasing number of outlets year after year reveals a provocative cross-section of the times, the ever-changing panorama of modern life. Twentieth Century America is more fabulous by far than mysterious Xanadu. In our lifetimes, we have seen the restless wonder of the Industrial Revolution propelled forward with speed that is truly breathtaking. People are on the go more because of the automobile. They stay home more because of television. Those in the country are moving to the city, and those in the

city are moving to the country. There is more work, and more free time. There is more money. The birth rate is up and the death rate is down. We are all headed for a long life, and a happy one.

Living in an industrial civilization has its complications, of course. One of the most notable is the interdependence of people everywhere. But therein lies the glory of the times. This interdependence has made the miracles of mass production possible. The soft drink industry, as an example, has evolved from the old hand-and-foot powered bottling operations of the turn of the Century because of the developments in other industries. Invention of the disposable bottle cap made possible today's high speed bottling lines. Developments in the glass industry were necessary before manufacturers could undertake so special a design as the Coca-Cola bottle. It was such a novelty in 1916, when it was first presented, that the big glass companies turned it down. Subsequently, the little glass companies that did handle it became the big companies.

One development invariably leads to another. The take-home beverage carton, originated by Coca-Cola bottlers in 1923 and now a standard method of merchandising throughout the industry, meant the addition of carton packing machinery. Display racks have sprung up in seemingly endless twists of ingenuity and outright gadgetry to get cartons out and up where customers can see them and grab hold of the handles. Nowadays there is intensive competition for space in the family refrigerator.

Refrigeration is one of the superb achievements of the Twentieth Century. It is a forceful factor in the preservation of food and, consequently, the health of the country. Yet the whole idea of refrigeration was a concept so staggering that it required nothing less than super-salesmanship to implant it in the public mind.

Coca-Cola tastes better when it is served ice-cold, so naturally we have been interested in any other business that promotes refrigeration. Both fountain and bottle sales have grown with the continued developments of that industry. In fact,

Northrop Developing New Interceptor

Northrop Aircraft, Inc., of Hawthorne, California, announced today it is building for the U. S. Air Force a new version of the twin-jet Scorpion all-weather interceptor known as the F-89H.

No details and no photographs of the new fighter plane were released.

Northrop also is in full production of Scorpion F-89D rocket-armed interceptors. The F-89D is armed with 104 air-to-air rockets and is recognized as America's most heavily armed operational airplane.

In addition to Scorpion all-weather interceptors, Northrop is building Snark SM-62 pilotless bombers for the Air Force.

our salesmen have long considered themselves refrigeration salesmen too.

Today's bright red coolers have established a merchandising pattern that not only creates business for the dealers but for the entire soft drink industry as well. They have opened up outlets that were unheard of twenty-five years ago—small stores with no refrigeration, filling stations, factories, offices, hospitals, schools. They have taken soft drinks out of the common ice-boxes, meat chests and cold storage compartments in places of business where refrigeration was available and provided a distinctive point-of-purchase recognizable to all customers for soft drinks. Thus they have increased volume, turnover, and customer traffic.

Today's bright red coolers symbolize the leadership of Coca-Cola in the soft drink industry. They dominate so many outlets for the simple reason that our salesmen have gone out and sold refrigera-

tion by means of this merchandising wonder, and pioneered new outlets. Millions of dollars are spent every year in advertising to create business in the coolers. Yet neither The Coca-Cola Company nor the Coca-Cola bottlers make a profit on any make or model. Their profit is strictly from the sale of Coca-Cola, the single article of merchandise. Coolers, cartons, cases, bottles and bottle caps, the ingredients for the syrup and the finished product, the machinery to bottle it and pack it, the trucks to deliver it, the signs to sell it—all come from sources outside the Coca-Cola business and with the profit for the suppliers.

Free enterprise, by modern definition, is nothing more or less than this interdependence, this working democracy of business creating business where honest goods and good ideas have liberty of movement within the limitations of fair competition. As such, it has a spiritual meaning sound in ethics as well as economics.

The Second World War gave us all a heightened appreciation of machines and a healthier understanding of the men behind them. Mass production was undoubtedly "the architect of the victory," and in no small way because workers were enabled to combat the more ancient enemy, fatigue. "Alternate rest and labor long endure" is wisdom as old as Rome. But its meaning to an industrial civilization was never more dramatically emphasized than this time of trial when all-out production effort was a matter of life and death to the free world. The importance of organized rest-pauses for food and refreshment in achieving maximum output was demonstrated in plant after plant.

The work market for Coke developed greatly with the impetus of wartime and the value of rest-pauses continues today as part of the modern concept of "living at work." That very phrase, in fact, so common today, points up the

MANAGEMENT SELF-EVALUATION



This month we conclude the series in a "Guide for the Self-Evaluation of Management" which began in the February issue of Armed Forces Management.

O. Safety.

1. Is there a comprehensive employee safety program in existence?
2. Is the safety program effective?
3. Is every effort made to eliminate hazards and to correct employee attitudes which are potential accident causes?
4. What methods of inspection are employed to insure that safety devices are used and are in good working condition?
5. Is the program guided by reg-

ularly published plans setting up immediate objectives and outlining the ways in which they may be accomplished? Are such plans based upon current needs of the program as shown by accident trends, analyses, and safety inspections?

6. Is the progress of the safety program reviewed at regular intervals and are formal progress reports made to all concerned?

P. Industrial Hygiene.

1. Is there a published station regulation covering the scope of the station's industrial hygiene program, together with a statement of the responsibilities and duties of all personnel with regard to the program?

2. Are all processes and operations which use or evolve toxic materials checked regularly to determine whether the maximum allowable concentrations of our contaminants are not exceeded?

3. Is there a method for the evaluation and control of toxic materials committee which reviews new materials and processes for health hazards and the protective provisions required?

4. Is the issue, maintenance, and sterilization of personal protective equipment adequately controlled?

5. Is ventilation equipment for toxic processes inspected regularly, cleared and maintained in good operating condition?

6. Are shower and clothes change facilities adequate for personnel exposed to toxic chemical dusts and vapors? Are handwashing and lunching facilities adequate?

7. Are industrial hygiene inspections by professionally qualified industrial hygienists being made on an annual basis?

8. Are periodic physical examinations made on persons engaged in health-hazardous occupations? Are physical limitations taken into account in the assignment of personnel? Are supervisors of persons with physical limitations informed of such limitations? Does this transfer of information apply to persons transferred from one supervisor to another?

9. Is there regular training and education provided for supervisory and non-supervisory personnel in connection with industrial hygiene hazards and their control?

END

Armed Forces Management is indebted to the Navy Bureau of Ordnance, Management Section for this series on management self-evaluation.

revolution that has occurred in Twentieth Century enterprise.

"Living at work" represents a final breaking of the barriers between job-hours and after-hours. It extends the freedom of enjoyment to the stronghold of sweat and toil. It has made modern industrial establishments "communities" in the hearty and wholesome sense of the word. Suburban living and decentralization of production have developed together, making an exciting and compatible combination in the landscapes. The thriving factories with color conditioning and recorded music outstrip the wildest dreams at the turn of the Century. "Work Refreshed" is a forthright factor in that modern concept that makes the job hours more productive because they are pleasantly productive. In all this, Coke plays a major role.

In 1943, a German prisoner-of-war coming down a gang-plank at one of the American ports, spotted a bright red sign. He stopped in amazement. "Oh," he said to an MP. "You have Coca-Cola here, too." The incident was widely reported in the press and Americans, generally, were as surprised as the German. It was news to them that something they consider "so typically American," was considered indigenous to other countries. It was like Main Street suddenly stretched around the world and a comforting thought to those with fighting men in the far-flung theatres of operations.

Actually, Coke had been abroad some fifty years, though never in the quantities attained in wartime and afterwards. All in all, some five billion bottles were supplied to our military men, mostly from Coca-Cola plants taken over on the spot or new plants set up by Army orders overseas. Coca-Cola personnel went along to operate the plants. They were designated as Technical Observers and attached to the armed forces. Some of them lost their lives in performance of their mission. The wartime policy of The Coca-Cola Company was to supply the Armed Forces of the United States "anywhere in the world with Coke for a nickel, no matter how much it cost."

We are proud of the job we did. And so were the GI's. They con-

ducted the greatest word-of-mouth campaign ever afforded a product in history and, according to advertising men in any line, that is the best advertising there is. Letters from the far islands of the Pacific, China, India, the Middle East, Mediterranean, and Northern battle-fronts contain passages about Coca-Cola no copywriters in the world could equal. The photographs of sailors at ship soda fountains, soldiers crouched in foxholes with Coke, leathernecks crowded around the mobile "jungle dispensers"—no artist could paint the positive expressions of enjoyment the faces convey. The downright love of the fighting men for Coke is without parallel.

More than fifty years as a growing part of the everyday aspects of American life were necessary to make this devotion possible. More than half a century of getting our product wherever people are, within arm's reach of desire, made the job of supplying the Armed Forces a natural extension of a long-established business practice. These special bottling installations overseas were used exclusively for supplying the Armed Forces.

But irresistible GI's were quick to fraternize, of course, and there is no telling how many military bottles have gone down the throats of "indigenous personnel" invited to servicemen's clubs, canteens, and the post exchanges. Most overseas operations cut off by the war have now returned to civilian production. In Germany, a triumphant return of Coke was celebrated with the slogan: "Coca-Cola ist wieder da!"—meaning "Coca-Cola is here again!" It is here again in more places than ever before. In some overseas places the per capita consumption is higher than in many of the first Southern cities in the United States to bottle our product. The Manila plant, revived from the war wreckage, now has one of the highest gallonage volumes in the world.

Post-war operations parallel an expanding concept of international relations. It is an era of growing respect and understanding. Increasing trade heralds the healthy dynamics of free enterprise throughout the free world. That means give-and-take. That means fair ex-

change of goods and services. That means, in the words of Mr. R. W. Woodruff, Chairman of the Executive Committee and chief executive officer of The Coca-Cola Company, "not selling the world short, but playing the world long."

That is another way of saying we are all involved together in this thing known as "life." If it is profitable for me, it must also be profitable for my neighbor. In the world of commerce there are no super highways to cut around communities, or by-pass certain areas. The international level always starts, or stops, at the local levels.

The growth of the Coca-Cola business overseas follows the same pattern of decentralization that helped make the business successful in the United States. It is the pattern of locally owned and locally operated enterprises. In Germany, it is a German business. In France, it is a French business. In Italy, it is an Italian business. The result is the purchase of German trucks, French trucks, Italian trucks, by the local bottlers of Coca-Cola—trucks, machinery, cases, cartons, coolers, advertising materials, and whatever else is possible to purchase in their countries. The business creates business wherever it goes. In countries that are not too highly industrialized our bottlers encourage the local development of the supplying industries.

The Coca-Cola Company manufactures only the syrup, or concentrate, necessary to make the finished product, but with this, it exports the know-how in the ways of a free competitive market that is often more effective capital than the export of dollars. Of all the thousands of employees on our Export Corporation payroll around the world, less than one per cent are American born. Key employees come to the United States for thorough training in production and sales promotion. They spend eight intensive months learning every phase of the Coca-Cola business, including the supplying industries. It amounts to a full-scale industrial education, for there is no telling what stages of development they will encounter in various parts of the world. They must be able to help the supplying industries there as well as our bottlers.

OFFICE DUPLICATION METHODS—HOW THEY COMPARE

Method	Number of Copies for which Best Suited*	Speed**	Estimated Cost per Copy**	Remarks
Diazo	1-20	1-30 feet per minute	¾-1½ cents	Original copy must be on translucent paper, on only one side. Cannot enlarge or reduce. Can copy photographs and art work. Produces positives. Color of printing can be varied from copy to copy, as can color of paper.
Facsimile	1-10, but can prepare offset masters and stencils	Single copies, 3 minutes; stencils and offset masters, 6 minutes	Single copies, 7½ cents; copies made with stencil, in runs of 20, 1½ cents	Copies original material, including photographs and art work. Cannot enlarge or reduce. Produces positives, black on white. Can prepare stencils and offset masters. Can be used for long distance transmission.
Gelatin (also called Hectograph)	10-100	10-75 copies a minute, depending on type of machine	Least expensive of all processes for short runs	Master must be prepared. Copies grow progressively fainter. Can print 8 colors at once; purple is best. Produces positives. Gelatin can be re-used.
Liquid (also called Spirit, or Fluid)	10-350	60-120 copies a minute	¼ to ½ cent	Master must be prepared. Copies grow progressively fainter. Several colors can be printed at once; purple is best. Produces positives.
Multigraph (also called Relief)	300-hundreds of thousands	3,000-6,000 copies an hour	Slightly more than stencil duplicators on long runs	Closely resembles typing; can be used for actual printing. Produces positives, one color at a time. Prints from movable type, electrotypes, or plates, permitting changes in material during run.
Offset (also called Multilith)	50-10,000	2,500-5,000 copies an hour	A fraction of a cent varying with run	Master must be prepared. Can reproduce photographs, letterheads, and art work. Can enlarge or reduce if master is prepared photographically. Produces positives, one color at a time.
Photocopy	1-20	1-2 copies a minute	8-9 cents	Copies original material, including photographs and art work. Most models make exact-size copies; some can enlarge and reduce. Produces negatives first, then positives, usually black on white—color available in some cases.
Stencil (also called Mimeograph)	50-5,000	60-200 copies a minute	½ cent on long runs	Stencil must be prepared. Cannot enlarge or reduce. Produces positives, usually one color at a time, but in some cases it is possible to print several colors at once.
Thermo-Fax	1-20	4 copies a minute	4-5½ cents	Copies original material, including drawings. Cannot enlarge or reduce. Produces positives, black on white.
Verifax	1-3	3 copies a minute; single copies, 50 seconds	Single copies, 9½ cents; in runs of 3, 4 cents	Copies original material, including photographs and art work. Cannot enlarge or reduce. Makes copies on standard office paper. Produces positives, black on white.
Xerography	1-10	Single copies, 2-3 minutes; offset masters, 3-5 minutes	Single copies, 9 cents; with offset, a fraction of a cent on long runs	Copies original material, including photographs and art work. Can enlarge and reduce. Can make single copies, offset masters, translucent diazo masters. Produces positives, black on white.

*Based on cost, speed, and other factors. Shorter or longer runs may be feasible in varying circumstances.

**Based largely on manufacturers' estimates, with reference to standard machines turning out letter-size copies.

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To assist our readers in keeping posted on new development in money-saving techniques and, by the presentation of comparative data, to enable them to consider adoption of procedures best suited to their needs in keeping with good management practice, ARMED FORCES MANAGEMENT will devote space each month to publication of such information.

Undoubtedly there are myriad cases of economies

in motion, time and money being effected through development of ideas conceived by our readers. In the interest of services-wide economy, the editor of ARMED FORCES MANAGEMENT will appreciate learning about them for possible dissemination through these pages.

If you have ideas to offer the Armed Forces please let the editor have them.

Wherever you go, the compass legs of Time and Space draw closer and closer. The far away places are not as far away as you think, and not essentially different from Main Street. Indeed the world is Main Street today with Coke busily playing host at more and more stopping places.

An Italian reporter, sent to cover the recent uprisings of the Mau-Mau tribesmen in the dense highlands of East Africa, included the following remarks in a dispatch to his newspaper, *Corriere de Modena*:

"The thing we discovered on the top of a native hut," he writes, "the only hut for hundreds of miles, was a colored square of tin tied to a pole as if it were a flag, and bearing the word 'Coca-Cola.'"

"Dear reader," he continues, "if you have never felt absolutely alone in certain conditions, do not smile. It seemed as if the whole of our surroundings had suddenly been transformed. There was no longer silence, impenetrable woods, but something warm and human, thousands and thousands of familiar sounds, of friendly voices speaking from the red and white piece of tin. We were no longer alone.

"I turned to the interpreter," the reporter writing in Italian for an Italian newspaper concludes, "and said: 'has that thing got as far as this?'"

"He answered: 'There are millions of those signs all over Africa. When the roads end and the paths begin, they are like military milestones. They're nice, aren't they?'"

"And re-invigorated we set off for the mountains to look for the mysterious Mau-Mau."

The management of this far-flung enterprise, encompassing all points of the globe, are best illustrated by our marketing procedures and policies. These have been formulated, to a large extent, by recommendations of our field forces, distributors and the independent bottlers of our product the world over. They are coordinated by our executives and staff in both Atlanta and New York. Indeed, we compare, in a small way, our management with that of the Armed Forces with a co-ordination center in the Pentagon.

Letters to the Editor

Dear Mr. Borklund:

The April 1955 issue of *Armed Forces Management* carried an article entitled "Army Tests Use of Smoke Screen for A-Protection," on page 16. This article, taken from the AFPS clippingsheet, contains a serious typographical error as it appears in your publication. The original stated, "... smoke screens ... may reduce casualties by as much as 75%." As published, it reads "5%." This makes it seem that the Chemical Corps has expended considerable time and money for an insignificant result, which is not the case at all.

The recent test of TRAC (thermal radiation attenuating clouds) at Operation TEAPOT was entirely successful. An attenuation of thermal radiation in excess of 75% was recorded (the actual figure is classified). This means that, by the use of smoke, the radius of lethal thermal radiation can be made smaller than the lethal radius of blast. There is obviously no point in any greater attenuation. This highly effective screen was put up in a very few minutes using standard Chemical Corps equipment.

The last paragraph states, rather inconclusively, that two types of

smoke may be used. The two types referred to are carbon smoke, which is black, and fog oil "smoke," which is white. They have both been tested and are equally effective. Both the fog oil and the concomitant N3 smoke generator are standard Army items.

Sincerely yours,
William M. Creasy,
Major General, U.S.A.,
Chief Chemical Officer

Editor's Note: On page 11 we have printed a correction to the error which appeared in our April issue. Please accept our sincere apologies.

Dear Editor:

I think Dr. Peck's article in your March issue is one of the best yet to be published in your new magazine. I for one, would like another, or more along this line. Incidentally what's his correct address?

B.B.G.

Editor's Note: We are sure Dr. Peck joins us in thanking you for your kind comments. He has promised incidentally to do another feature later in the year. You may reach the Doctor % College of Education, Department of Educational Psychology, University of Texas, Austin 12, Texas.

Dear Editor:

Have you ever thought of a feature from one of the fine people in the Veterans Administration? I think working with the military, their slant would be welcomed by all readers.

G.C.C.

Editor's Note: Thank you for your suggestion, and we have contacted Doctor J. Arthur Waites, Ph.D. Chief, Clinical & Counseling Psychology Training Units for Southern California, who is tentatively scheduled for our September issue.

The first landing aboard the SARATOGA (CV-3), was made 11 January 1928.



We're
Waitin'
For You!

The door's open and we're waiting for you to drop in to tell us about cost-cutting suggestions, or conservation ideas, being used at your installation. We'd like to pass them along to our management and cost-conscious-minded readers. Of course, if you're not in the neighborhood—we're only three cents away!

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What's NEW in Suggestions?

And

CONSERVATION THOUGHTS

Seattle Port of Embarkation. Adoption of 36 suggestions by the Seattle Port of Embarkation resulted in an estimated saving in 1954 of \$30,000 for the American taxpayer, Port Commander Colonel E. Jeff Barnette announced recently. At the same time it put a total of \$1070 into the pockets of the successful suggesters.

A total of \$405 for suggestions, which promote efficiency and safety, and effect monetary savings, has already been awarded in 1955. Presentations to the 15 employees were made at two recent ceremonies, one of which was the largest ever held at SEPE.

The recipients were: Vera T. Haugen, \$10 for a new procedure; George M. Smith, \$10 for use of a draft deflector; Herman Sackhoff, \$50 for a suggestion which will accomplish a saving and improve public relations; A. David Pearson and A. Frank Anderson, \$50 each for a joint suggestion pertaining to shipping of cargo; Wilma G. Besse and Claud A. Embree, \$37.50 each for a time and money saving suggestion; Albert D. Pinney, \$15 for elimination of a safety hazard and \$25 for a first aid training course suggestion; Sigrid Barger, \$10 for a time and material saving suggestion; Delbert A. Green, \$35 for elimination of a safety hazard; Charles W. Campbell, \$25 for recommending a better cleaner for typewriters; Annabelle E. Barr, \$15 for an improved procedure which reduced the volume of documents; Faye E. Nugent, \$25 for a revised shipping baggage and household goods form which reduced the amount of correspondence; and George Labarge, \$10 for a new use for scrap lumber. Campbell and Barr are three time win-

ners and Pinney is a four time winner under the program.

Wright-Patterson Air Force Base, Ohio. Sales of surplus property by the Air Force during 1954 reached the all-time high of \$19,250,600 the Air Materiel Command announced recently. The record sales resulted from the Air Force disposal program, which requires a constant review of stocks to eliminate unneeded property.

Palm Beach Air Force Base, Florida. Troops of the 1740th Air Transport Squadron are being paid these days from an automobile. The pay center on wheels is saving many man-hours for the unit.

Naval Supply Depot, Spokane, Washington. During the past quarter, reclamation and conservation of such materials as lumber, bolts, steel, bags, cartons, etc., have produced a grand savings of \$8,186.

Headquarters Third Army, Fort McPherson, Georgia. Conservation has really been the theme in Third Army during the last quarter and savings top the \$2-million mark. The actual savings reported totaled \$2,490,032 and represent savings in fund requirements, expenditures or personnel strength.

SEATTLE PORT OF EMBARKATION. By using "horse sense" standards and holding a continuous tight rein the Seattle Port of Embarkation in three years has reduced internal reports from a total of 58 to only 30. The reduction in hours with the resultant savings in dollars is even more impressive. The former total of 3,010 hours has been sliced to a mere 956 manhours for a saving of approximately \$3800 or the time of one full time employee. The guideline which determined whether or not a report got the axe was: "Does it serve a

positive use essential to the performance of the mission of the initiating or receiving element?"

Fort Lesley J. McNair, Washington, D.C. Marie L. Jones, employed in the Visual Aids Unit of the Industrial College of the Armed Forces, suggested several months ago that money could be saved doing art work on visual aids instead of contracting with a private commercial firm. One problem remained in "who" was going to do it. Marie solved this one by taking art courses on her own time, using her G.I. Bill earned as a WAC during WW II. For her efforts, Marie recently received a check for \$280 which again shows that suggestions can and do "pay-off".

SMAMA (AMC) Sacramento, California. By the widest margin ever racked up the SMAMA Suggestion Program took first place in competition with all other AMC programs for the calendar year 1954. Employees submitted 4,512 suggestions of which 1288 were adopted and awarded. Cash awards paid were \$54,795.97 and savings exceed 2 million.

Diamond Ordnance Fuse Laboratories, Washington, D.C. Robert M. Carson has received the Meritorious Civilian Service Award for his design of a safety device for hydrogen distribution system which contributes greatly to the preservation of lives and property by reducing explosion hazards. Details of this device are given in Technical Report No. TR-27, published by the Laboratories.

Engineer Research and Development Laboratories, Fort Belvoir, Virginia. Mr. Lewis D. Eckhard, a ten-year employee suggested that a trailer lighting adapter kit with inter-vehicular harness be used when a vehicle is towing a trailer having a different voltage. Mr. Eckhard is \$50 richer and the government dollars ahead.

General Motors Corporation. Between the years 1942 and 1953 inclusive, a total of 1,126,370 suggestions have been submitted. Of this number, 263,516 were adopted, and \$11,652,250 paid employees.

Sierra Ordnance Depot, Herlong, California. The largest individual award ever made to an employee of

Sierra was presented recently. The award resulted from a suggestion which saved the government \$21,492.74. Receiving a check for \$335 and a certificate of recognition was Mr. Aaron Estess, an Ammunition Storage employee. Making the presentation was Colonel Howard M. Elliott, Depot commanding officer. The submitted suggestion was for modification of pallets used in handling fired brass. It permitted the operation to be accomplished with forklifts instead of a conveyor system.

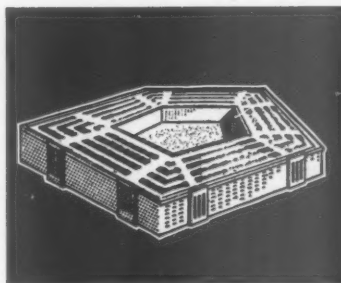
Alaskan Air Command. A tabulation of the AAC Incentive Awards Program for 1954 increased over 15 times during the year. A total of 200 suggestions submitted, showed 10 in the money for over \$2000 net. Estimated savings from the 10 are close to the million dollar figure. 14 Superior Accomplishment Pay Increases and 2 Awards for Meritorious Civilian Service, were presented during the period.

U.S. Marine Corps Air Station, Cherry Point, N.C. A savings to the government of an estimated \$9,532.50 and 190 manhours annually, plus improved safety and working conditions, is the result of the suggestions of 14 civil service employees. The men, employees of the Public Works and Overhaul and Repair Departments, were honored recently in ceremonies at MCAS Cherry Point. Colonel F. C. Croft, CO, presented the checks ranging from \$5 to \$190 with his personal congratulations.

Lackland Air Force Base, Texas. Of 15 management improvement suggestions approved last month by the Wing Management committee, three were designated as "outstanding".

Utah General Depot, Ogden, Utah. 10 employees shared in cash awards recently for management improvement ideas. Top winner was Mr. Moyle N. Christensen, who received \$230 for his suggestion to eliminate steel banding of boxes at the procurement source, as a duplication of effort and materials.

St. Louis Ordnance Plant. Mr. Charles Bushman received \$215 for a new "de-linker" which will save many hours of manual operation.



Department of the Air Force. Civilians will take over 30,000 more Air Force spaces in the United States in the next fiscal year.

Department of Defense. The Department of Defense Military Personnel Records Center will open in St. Louis, Missouri, this fall under the operational control of the Army, but staffed by military and civilian personnel of all services. The new building, housing the center is scheduled for completion early in October.

Department of the Army. General Maxwell D. Taylor has been appointed Army Chief of staff. Taylor, former 8th Army commander and commander in chief of U.S. and Allied forces in the Far East, succeeds General Ridgway, who is retiring.

Department of the Navy. 321 enlisted aviation pilots have been selected for promotion to three junior officer grades. Many of the men appointed previously served in officer ranks. Promotions are scheduled for July, and represent the first to temporary officer grades since 1950.

Department of the Air Force. Major General Clarence S. Irvine, USAF has been appointed Deputy Chief of Staff for Materiel succeeding Lt. Gen. Bryant L. Boatner. General Irvine will be promoted to lieutenant general in his new assignment.

Department of the Army. The long-discussed plan to separate noncoms from specialists will go into effect on the first of next month. New enlisted personnel records (Forms 20 and 24) will be adopted, and tables of organization are being distributed to field commands. Specialists in the top four enlisted grades are receiving new insignia.

Department of the Army. A device which may be used to give

Washington Management

instant warning of an enemy germ warfare attack has been perfected. The device, known as "aerosoloscope", measures and counts microscopic airborne germs, dust and moisture particles, one at a time, at the rate of 100 per second. It will also count radioactive particles and determine their size.

Department of the Navy. For the third consecutive year, the Bureau of Ships has won the Secretary of the Navy Award for Suggestion Program Excellence. During fiscal 1954, employees of BuShips and its field activities, submitted 39,245 improvement ideas. Savings to the Navy in labor and material of over \$6.5 million, resulted from the years use of the 13,043 adopted. Leading the way among BuShips activities were: (1) San Francisco Naval Shipyard with a participation rate of 58.9 and an adoption rate of 24.3 per 100 employees; and (2) Pearl Harbor Naval Shipyard with rates of 60.9 and 13.9 respectively.

Department of Defense. A program originally set up by the staff director for the Disposal program, has been finalized on the Hawaiian Island of Oahu. The Army, Navy and Air Force recently entered into a joint agreement for consolidated sales of surplus property. The new program calls for the disposal officer at NSC Pearl Harbor to act as the agent for all three services in the sale of surplus material.

Department of the Army. Four transfer stations at Fort Meade, Maryland, Fort Knox, Kentucky, Fort Bliss, Texas, and Fort Carson, Colorado, will be discontinued at the end of this month. Personnel Centers will be put in at Fort Hamilton, New York, and Oakland Army Base, California. The changes will result in a large savings in manpower and are necessitated by the reduced load over the past six months.

The Marine Point, federal include the U.S.

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Merchant Marine Academy

The United States Merchant Marine Academy, located at Kings Point, New York, is one of the five federal service academies which include the U.S. Military Academy, the U.S. Naval Academy, the U.S.

Coast Guard Academy and the U.S. Air Force Academy. It prepares men to become officers in the United States Merchant Marine, and the United States Naval Reserve, and, like these schools, is military in character. It is a national institution, an accredited four-year degree-granting college like the other federal academies.

duration, has announced plans for a new program to go into effect in September 1955 which will inaugurate a nine-and-one-half month course to run concurrently with the shorter course.

United States Air Force Academy. Candidates numbered 6,358 by the time of the final deadline for nominations. The historic first class of 300 Air Force cadets will be selected from the qualified nominees and applicants after competitive examinations. They will enter the Academy in July 1955 at its temporary site, Lowry Air Force Base, Denver, Colorado.

Army Language School. Plans are being finalized to give this first language-intelligence school a permanent status. More than 2000 Army and Air Force military students and instructors are kept continually busy working with the more than 20 foreign languages offered at the school. In addition to the language, students also are absorbing facts about the geography, history and economics of the countries where the languages are spoken.

Marine Corps Schools, Quantico, Virginia. A recent announcement states the Junior Course for Fiscal Year 1956 will be convened on 6 September 1955. The nine-month course of instruction, designed to prepare majors and captains for command and staff duties in current and next higher grades, will be attended by more than 200 students.

Army Information School, Fort Slocum, New York. The 1956 Fiscal Year Schedules for the PIO School have been established during the following periods: 22 August-17 October; 24 October-19 December; 9 January-5 March; and 26 March-21 May.

General Dynamics Corporation. Funds have been provided for the establishment of an Institute of Nuclear Medicine, an organization to be devoted to nuclear applications in the fields of curative and preventive medicine and public health.



SERVICE SCHOOLS

Cornell University, Ithaca, New York. Cornell University is sponsoring a series of Industrial Engineering Seminars lasting from June 14 through June 17. The series is divided into six groups: Industrial Management, Manufacturing Engineering, and Small Plant Management, Work Measurement, Applied Industrial Statistics, and Industrial Marketing. Registration will be June 14 at 8-9 a.m., at the University's Statler Hall. For further information write to R. E. McGarrah, Seminars Coordinator, and Cornell's College of Engineering.

Camp Lejeune, North Carolina. Radio-Electronic Repair School, 2nd Combat Service Group, graduated 20 students recently in the first class of trained electronic maintenance personnel. The school is divided into three separate phases: basic, intermediate and final; each of four week's duration. After completion of each phase, students return to their parent organization for three months.

Command Management School, Ft. Belvoir, Virginia. Expansion to include ranking Air Force, Navy, Marine Corps and Coast Guard Officers in the Command Management School is being welcomed by these services.

Management Center, Marquette University, Milwaukee, Wisconsin. Two new conferences are scheduled early this month at the Management Center. The first, Personnel Testing, June 1, 2, and 3,

and the second, Introduction to Quality Control by Statistical Methods, June 6-17.

Maxwell Air Force Base, Alabama. Graduation of the Squadron Officers School (720 students) was marked recently by a jet acrobatics show, a precision drill squad, and a widely acclaimed drum and bugle corps. Students heard an address by Lt. Gen. Hubert R. Harmon, USAF superintendent of the new Air Force Academy, and were reviewed by Lt. Gen. Laurence S. Kuter, USAF, commander, Air University.

Army Finance School, Fort Benjamin Harrison, Indiana. A six-weeks Military Comptroller Course (Class No. 2) designed to train military and civilian personnel in the principles and techniques of comptrollership began on 23 May, 1955.

The Infantry School, Fort Benning, Georgia. Two special Officer Candidate Courses for National Guard NCO's and warrant officers are being conducted by TIS this summer. The eight-week courses are designed to train platoon leaders for Infantry National Guard units. The first class is in operation, having started on 2 May and will end on 8 July. The second is scheduled from 13 June through 19 August.

U.S. Navy Post Graduate School, Monterey, California. The General Line School which in the past has had a curriculum of six month's

● **NIKOLAI E. KHOKHLOV**, ex-Soviet intelligence agent who came over to Western camp, *commenting on Soviet upheaval*: "This (return to Stalin policy) will make a revolution possible much sooner. It is like an illness. If it stays chronic, then a patient can keep alive 5 or 10 years. He dies slowly with much suffering. But, with Khrushchev's policy, this illness in the Soviet Union can become acute."

USS Congress To Be Next Supercarrier

The Navy's fifth Forrestal-class carrier will be named the USS Congress.

This revelation was made by Chairman Carl Vinson (D-Ga.) of the House Armed Services Committee as he spelled out complete details of the Navy's planned shipbuilding program for the coming fiscal year.

Mr. Vinson has introduced a shipbuilding authorization bill which calls for construction of 24 new warships and conversion of 28 other vessels.

The number of warships previously had been disclosed by Navy Secretary Charles S. Thomas, but the Secretary did not specify the number of conversions included in the \$1,317,000,000 program.

According to Mr. Vinson's proposal, conversions will include six carriers, one heavy cruiser, one guided-missile light cruiser, one guided-missile destroyer, 12 radar picket escort vessels, two cable repairing and laying ships, one seaplane tender and four ocean radar station ships.

As planned, the shipbuilding program will cost approximately \$275 million more than was appropriated for fiscal year 1955.

Secretary Thomas has said, however, that the actual number of ships operating with the fleets during the next 16 months will be reduced. Twenty-six new vessels (including the USS Forrestal), from previous shipbuilding programs, will be added to the fleet during the year, but the overall total will drop to 1,001 by 30 June 1956. This is 100 fewer ships than the Navy had at the beginning of fiscal '55.



Book Reviews

by D. D. Corrigan

No Peace or Calm

"PRINCIPLES OF HUMAN RELATIONS," by Norman R. F. Maier (John Wiley & Sons, 474 pages, \$6.00).

The opening quotation by Edward Benes sets the theme and mood of this book. "There can be no peace or calm in this world until there is full honor and respect of one individual for another."

The subject matter is written for persons who are interested in the problems of human relations and developing more fully the nature of man. The text is pointed to industry and applied to management, but the principles should interest anyone who deals with people — which of course includes everyone.

The program of Dr. Maier is new and advanced. Group dynamics, catharsis expression, and non-directive counseling are becoming everyday words in the language of progressive men and women. The thoughts and feelings of modern management and industry are that understanding and co-operation between all individuals is of prime importance. The soldier, the statesman, the secretary, the clerk — all produce better work and are more responsible individuals if certain principles are followed.

Learning theory, creative thinking, conference leadership, industrial psychology, frustration and neurosis, and abnormal behavior are some of the fields Dr. Maier has intensively studied and presented to the public through his writings. Although he is a Professor of Psychology at the University of Michigan, Dr. Maier is not one to just lecture and write on high sounding techniques that can appear desirable only in a classroom. Instead, he has proven his theories by applying them to leading industries.

The greatest contribution he makes in this book is in the actual examples and case histories that show applications of principles to industry and management relations. Theories are clearly understood when the problems of coffee

breaks, who does the undesirable job, vacations, clock watchers, and many more are solved by true case histories.

The author compares behavior traits shown by Democratic Leadership and Autocratic Leadership. Under the first it was found that employees developed initiative and responsibility, co-operated actively, and were friendly and united. This was opposed to dependency, isolation, irresponsibility, cliques, and a feeling of hostility which was revealed under Autocratic Leadership.

The objective of a training course must be clearly defined. Lectures, films, or textbooks will educate people to a certain extent, but only by participation and group discussion is it possible to change a person's attitude. During World War II it was decided to encourage housewives to cook beef hearts, kidneys, and sweetbreads due to the shortage of meat. Through lectures 3% changed their food habits, but by group discussion 32% tried the new foods.

Under a trained leader, free expression brings material into the open and permits expressions of hostility, fears and suspicion. Phillips 66 is a technique by which large groups are divided into small groups of six members and asked to discuss a problem for six minutes. Psychodrama or "role playing" enables people to learn about themselves and shows an individual how he can fail to practice what he preaches.

Here is a timely book that is easily read and understood. In the divided world we live in today, there is a great difference in how problems of human beings are handled. In Communistic countries the emphasis is on psychological warfare, brain washing, and the individual is not thought of as being important to himself, but only in his relationship to the state. The Democratic way is free expression, teaching men and women to think for themselves, and re-evaluating

pre-conceived ideas. The individual and his relationship to others is the important consideration.

"THE DARK ARENA," by Mario Puzo (Random House, 308 pages, \$3.50).

A novel about the American occupation troops stationed in Germany after World War II. Mr. Puzo is a skillful writer and presents a "new style" to the form of literature.

Memo To Personnel Department "INCENTIVE MANAGEMENT," by James F. Lincoln (The Lincoln Electric Company, 280 pages, \$1.00 in U.S.A.).

TO: Supervisor

I had lunch the other day with James F. Lincoln, and, believe me, there's a man who knows what he's talking about. For the last thirty-six years he has been a very successful president of a progressive and profitable manufacturing concern. He took over the direction of this company after the firm had gone bankrupt, and today this company is a leader in the field in which it is engaged.

I would like you to read "Incentive Management," which Mr. Lincoln has written explaining a new approach to human relations in industry and business. I believe you could incorporate some of this material in your department. Consider these main points:

Certain conditions and incentives will aid an individual to develop his latent talents. There is no limit to what a man or woman can accomplish if he or she has self confidence, ambition, and opportunity. Profit sharing is one phase of incentive management, but it is not the complete answer; just as a company run for profit alone will not be successful. There is no substitute for free enterprise, which is the reason America is now on top.

The basic goal of any industry should be "to make a better and better product to be sold to more and more people at a lower and lower price." Industry must acknowledge it has great responsibilities and must have a broad outlook.

Freedom used to be the motto of early Americans, but this has now

been sacrificed to security. The individual has the responsibility of his own welfare and must not expect government or management to assume producing jobs and required income in the competitive economy of today. There is never any freedom from responsibility.

Notice such headings as "Don't Wait For Funerals," "Be A Leader, Not A Boss," "Challenge Custom," or "Hard Work Is Healthy." A book could have been written on each title, and they present many ideas for thought.

If the teamwork and incentive of amateur athletics could be utilized by industry, increased skill and output would result. Not money, short hours, safety, seniority, or security, but recognition causes people to strive for success.

In order to have a successful incentive program it must be based on the needs of the people involved, and must be desired by the people in the organization. Incentive management does not force co-operation between individuals and between individuals and the company, but rather invites it. New visions and new attitudes must be understood and shared.

I will be interested to hear your opinion of this book. Let's get together soon to discuss it.

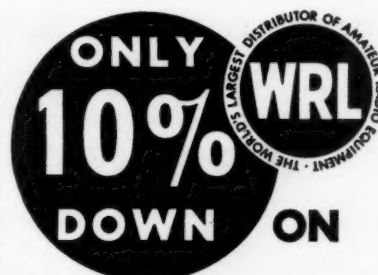
Vice-Chairman in Charge
of Memos

Numerical Values

"INDUSTRIAL SPECIFICATIONS," By E. H. Mac Niece (John Wiley & Sons, 158 pages, \$4.50).

The government has recognized Mr. Mac Niece's valuable experience in the field of application of management principles, by appointing him Chief of Education and Training for the Mutual Security Agency in Europe. His "know-how" will be of great assistance to the countries of Western Europe.

"Industrial Specifications" shows the large emphasis industry is placing upon scientific methods and principles. Specification problems must be answered by improving statistical quality control techniques. Here is a book that provides the basis for effective specifications and their relation to the control of quality.



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- ☐ See Attached Letter

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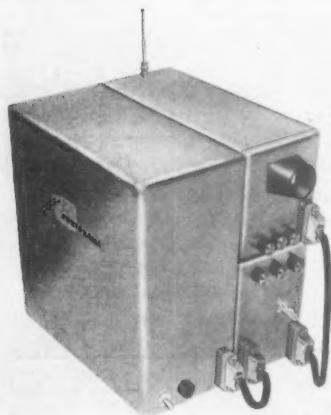
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A Products Information Library has been established and descriptive literature, catalogues, and reference material is available to you without cost or obligation. The firms have been carefully selected, have a high standing in their respective line, and deserve consideration. They are NOT, in each case, advertisers in ARMED FORCES MANAGEMENT, but each offers you a service or product which we feel will be helpful in your operation. Operating and Purchasing departments are respectfully urged to take advantage of this service.

How to Use Armed Forces Management's Library—

Inserted in this issue, a postage free card is provided for your convenience in requesting descriptive and informative literature. This will be forwarded to you, without obligation. Many cost saving ideas are generated by Operating Departments that have referenced information on products available. Purchasing Officials will find this type of information invaluable. All that need be done is: fill in name and address, circle that which will assist you, and drop in the mail.

GIBBS MANUFACTURING COMPANY (see cut). The new Gibbs Portorama Camera was designed to afford portability of a complete television camera system consisting of the camera unit, monitor, transmitter and power supply. With a total weight of 22



pounds and a picture quality equal to commercial TV reception, the unit will operate from six to eight hours before battery charging is necessary. New techniques such as printed circuits, transistors and miniturized components, have been used generously to reduce overall size and weight. The camera unit contains a vidicon 6198, all the sweep generators, video amplifiers and necessary camera controls in addition to a modulator and transmitter. The only camera of its type available, acceptance by the military services will result in another "first" for this leading manufacturer of electronic equipment.

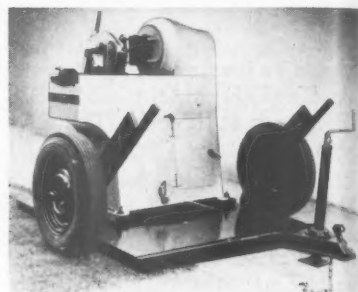
For more facts request No. 30 on reply card

TELEX, INCORPORATED. Literature describing a new muff-type headset called the "Teleset" is available by this manufacturer of hearing aids and electronic components. The lightweight (1.6 oz.)

over-the-head style unit is constructed of stainless steel and plexiglass. The receiver is located in the plug to reduce weight.

For more facts request No. 31 on reply card

GAINES-COLLINS (see cut). This manufacturer of automatic pipe threading and cutting machines, have announced a new line of mobile pipe shops. First of the



line to be introduced is a trailer, specially designed for the company's Thred-O-Matic "44", to permit on the job cutting and threading of pipe. Total weight of machine and trailer is just 1800 pounds. Head of the Thred-O-Matic is made of aircraft aluminum, the carriage of magnesium which counts for the extreme lightness and its high mobility. In addition, the Thred-O-Matic has an exclusive power operated positive fingertip control of the cutting and threading operation.

For more facts request No. 32 on reply card

TENNEY ENGINEERING. A versatile, multi-purpose testing chamber, the "Tenney-Mite," has created a new trend toward small-size, low cost test chambers which can perform multiple functions in labs and medium sized shops. The "Tenney-Mite" operates as a complete low or high temperature testing unit, a bath or a laboratory oven. With an interior capacity of 1½ cubic feet, it is recommended for metal treating and tool chilling, for testing instruments and electronic components, and for pharmaceutical storage and preservation. "The Tenney-Mite" operates on any regular 110 volt 60 cycle line, and is available in three low temperature ranges: -40 degree F., -100 degrees F., and -120 degrees F. Reported pull-down on the basic

-100 degree F., model is approximately 60 minutes.

For more facts request No. 33 on reply card

SAFEWAY INDUSTRIAL EQUIPMENT CORPORATION.

A new model, low-cost lightweight automatic drum stacker which was exhibited at the recent Plant Maintenance and Engineering Show, has become a fast-selling item to industry and the military services. A catalog with full details and specifications is available to interested personnel.

For more facts request No. 33 on reply card

JOHNSON MOTORS. A complete catalog of the new Johnson outboard motors is available. Johnson Motors, which has followed up its revolutionary 1953 introduction of the first "quiet" outboard by applying the same cushion-drive silencing system to the three big-power Sea-Horse motors for 1955, expects quiet and throb-free comfort to mark a new trend in consumer appeal.

For more facts request No. 34 on reply card

PRECISION EQUIPMENT COMPANY. A new heavy-duty power mower and mulcher with a full 18" cutting width, speeds lawn care and eliminates forever old

fashioned lawn cutting and leaf raking. The heavy, 1-piece, non-breakable chassis combined with fine-ground super-hardened blades which are adjustable from $\frac{1}{8}$ " to $2\frac{1}{8}$ ", has made this new mower a must for management-minded operations. This remarkable mower, regularly priced at \$84.00, is available for \$49.95 until July 31, 1955.

For more facts request No. 35 on reply card

REVERE CAMERA COMPANY.

A new self-operating slide projector has recently been announced by the Revere Camera Company. Model 888 shows 36 35mm slides of any type mounts, automatically fades them in and out and returns them to the magazine in ready-to-show sequence. A function knob for slow, medium, fast, semi-automatic or manual operation. Instructors find the new self-operating projector the answer to many problems. 500-watt illumination, F/3.5 Wocoted 5-inch anastigmat Wollensak lens and 20 exclusive features.

For more facts request No. 36 on reply card

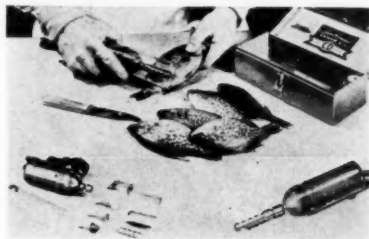
W. R. MEADOWS, INCORPORATED (see cut). A new catalog on Meadows Sealtight Paving Products, covering asphalt expansion joints, corkfill expansion joints,

ALEMITE (Division of Stewart Warner). Thousands of machines equipped with Alemite Oil-Mist systems have proven dollar-savings to industry. Oil-Mist lubrication is constant and automatic, starting when the machine starts. The complete story of Oil-Mist, how it can bring these savings to each installation, specifications and typical uses is available to engineering personnel.

For more facts request No. 38 on reply card

AMERICAN HOMECRAFT COMPANY

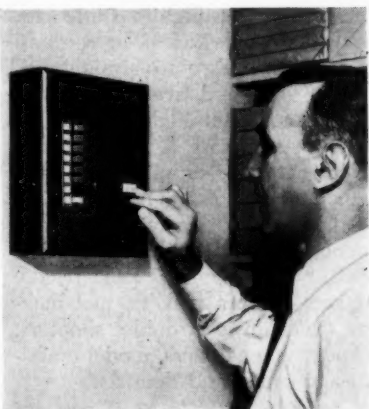
(see cut). A new Sportsman's Power Kit including an automatic, electric fish scaler, has been



developed to meet the needs of the millions of fishermen who have long wished for an easier way to scale the fish they catch. In addition to fish scaling, the kit contains accessories to aid in sharpening hooks, knives, etc., shining tackle, cleaning reels and many other uses. This inexpensive kit, 9 x 4 x $2\frac{1}{2}$ " is available under a money-back guarantee.

For more facts request No. 39 on reply card

EXECUTONE INCORPORATED (see cut). Wall-mounted Master stations and economical "single amplifier" operation are among several of the outstanding features of the new "6000" electronic Intercom System, recently introduced by Executone. An eco-



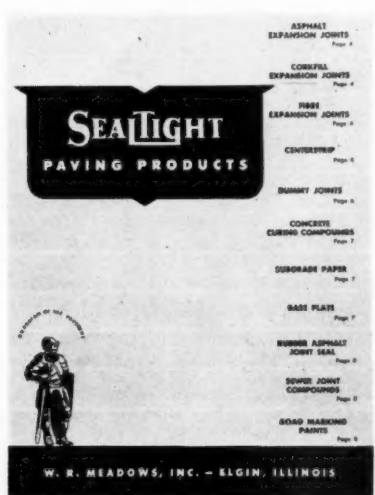
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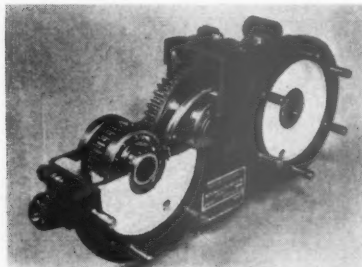
fibre expansion joints, center strip, dummy joints, concrete curing compounds, subgrade paper, base plate, rubber asphalt joint seal, sewer joint compounds and road marking paints is available to interested personnel and organizations.

For more facts request No. 37 on reply card

nomical central amplifier, drawing only as much current as a thirty-watt bulb, is the only unit in the System that requires an electrical power outlet. In addition to two-way intercom, this new Executone System provides complete facilities for paging. To quickly locate roving personnel, a special paging button on every master permits all stations to be called at once.

For more facts request No. 40 on reply card

AIRCRAFT AND ELECTRO PRODUCTS (see cut). Western Gear announces new airborne accessory drive gear box, incorporat-



ing a self-contained lubrication system, and which may be used as continuous duty unit. Some of the applications incorporate the use of hydraulic motor as the driving member and drive and AC and DC alternator, it was announced. Gear box shown in the adjacent photo, Model 1603, incorporates a gear ratio between input and output pad of 1:2.444 with other ratios available on special request.

For more facts request No. 41 on reply card

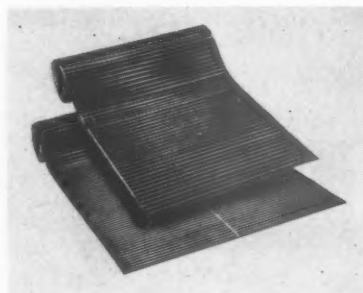
GENERAL SCIENTIFIC EQUIPMENT COMPANY. Accuracy of production and inspection procedures is increased, work is speeded and simplified by the G-S Syte-Ayde which provides light in out-of-the-way places. Powered by flashlight batteries, the Syte-Ayde provides 4 light transmitting rods. Two are straight, 3½" and 6" long and two, of the same lengths, are bent 90 degrees. Three 1½ power mirrors, ½", ¾", and 1¼" in diameter are supplied with clips which fit rod ends. All parts are contained in separate compartments of a plastic kit. This ideal multi-purpose light is used by die makers, pattern makers, tool makers, machinists, trouble shooters, inspectors, engineers, model craftsmen, doctors, and dentists.

For more facts request No. 42 on reply card

MINNEAPOLIS-HONEYWELL REGULATOR COMPANY. Has just developed a radically improved, truly superb, complete line of gas water heater controls—the Honeywell AQUA-MAID. Write for complete details about the outstanding appearance, superior design and engineering improvements of these new models. You'll want to ask your manufacturer to furnish the streamlined Honeywell AQUA-MAID on your water heaters so that you'll be able to take advantage of all of these important new features. For your convenience, Honeywell has a nationwide staff of trained control engineers available on a cost free basis to help you by conducting service training meetings and to provide you with free instructional literature.

For more facts request No. 43 on reply card

WEAR PROOF MAT COMPANY (See Cut). A new "Double-Duty" rubber mat which increases safety and successfully combats excessive leg and foot fatigue was announced by the Wear Proof Mat Company. The new mat comes in two designs: NIRU SHAD-O-RUG and NIRU CROSS-RIB RUNNER. Both are grease, oil, and chemical



proof; both are made of specially formulated live rubber which has taken the manufacturer years to develop. The new live rubber forms "raised ribs" on the surface of the mat. These ribs offer a gripping surface for exceptional safety and serves to reduce worker fatigue at the same time. They have a "windshield-wiper" cleaning effect also, making for easier cleaning.

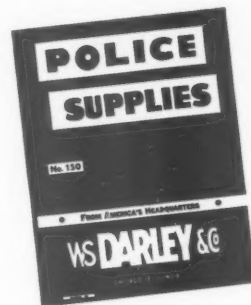
For more facts request No. 44 on reply card

BENDIX AVIATION CORP. The first successful airplane flights with all-transistor-equipped automatic navigation and landing systems in place of vacuum tubes has

been announced by Bendix Aviation Corporation. The achievement was announced by Roy H. Isaacs, general manager of the Eclipse-Pioneer division, which last November disclosed the first successful flight of a plane controlled by a transistorized automatic pilot. Now the new flights extend transistor-equipped automatic flight to instrument landing approaches and cross-country flights on radio-marked airways.

For more facts request No. 45 on reply card

W. S. DARLEY & COMPANY. (See Cut) Catalog No. 151 is specifically designed for Fire Protec-



tion Organization, Post and Base Engineer's and others responsible for fire and safety. W. S. Darley for 47 years have been leaders in Police, Fire and Municipal supplies.

For more facts request No. 46 on reply card

WEBER AIRCRAFT CORPORATION. Has been awarded the initial ejection seat contract for operational versions of the McDonnell F-101 long range, strategic fighter. The ejection seat for the F-101 includes several new developments designed to increase pilot comfort and simplify maintenance problems. The new seat is designed so a global survival kit can be placed beneath the pilot for emergency ejection. The design also provides additional hip and leg room for the pilot, which minimizes fatigue on long range operations.

For more facts request No. 47 on reply card

TENNEY ENGINEERING, INC. Leading producers of refrigeration and environmental equipment, recently announced the issuance of Bulletin No. 109-55 on their new Angle-Air Unit Coolers.

ARMED FORCES MANAGEMENT

Attractively printed in two colors, this illustrated bulletin gives full physical specifications and complete application data on Angle-Air Coolers, from which it is easy to select the proper unit for each refrigeration application.

These new Tenney Coolers feature: simple as A-B-C Angle-Air three-step installation techniques; smooth ultra-modern appearance, a wide selection capacitor from 2,600 to 54,000 B.T.U., sensitive aluminum Facitized® fins, and many, many other significant advantages which make them easy-to-install and easy-to-service.

Copies of this new Tenney Bulletin No. 109-55 may be obtained by writing to Tenney Engineering, Inc., 1090 Springfield Road, Union, New Jersey.

*Patented

For more facts request No. 48 on reply card

FULD BROTHERS INCORPORATED. Associated JUST Distributors, through FULD BROTHERS, have introduced a new product, OUT, a washroom fixture cleaner



and disinfectant with important advantages over conventional cleaners ordinarily used in washroom maintenance. OUT performs four jobs in one—cleaning, disinfecting, sanitizing and deodorizing.

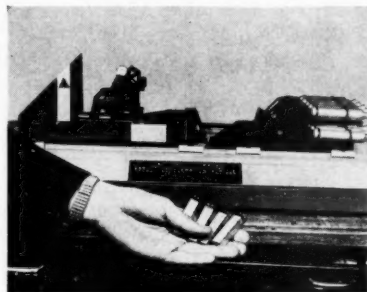
For more facts request No. 49 on reply card

ALLIED RADIO CORPORATION. Recent announcement has been made of a completely revised edition of "A Dictionary of Electronic Terms" containing over 3,500 terms used in television, radio and

industrial electronics. This 72-page booklet is available for 25c covering handling and mailing costs.

For more facts request No. 50 on reply card

STATHAM LABORATORIES, INCORPORATED. High speed deceleration sled tests in the recent U.S. Air Force Abrupt Acceleration



Vehicle Project registered the crushing g forces with Statham Model F accelerometers. The run in which Lt. Col. John Paul Stapp, USAF, attained a speed of 632 miles per hour resulted in his withstanding a peak of 40 g, with an average of approximately 25 g. Weighing less than an ounce, the Model F accelerometers are available in ranges of plus or minus 2 g to plus or minus 100 g.

For more facts request No. 51 on reply card

PLAS-TIES COMPANY. A new answer to the old problem of what to do with push broom handles on which the threads have been damaged or broken is offered by the



Plas-Ties Company, manufacturers of the TAYLOR HAND LATHE. Broken handles can be re-threaded in less than 3 minutes with this new, compact, easy to use hand

tool. Truly a cost-saving product, it reduces stocks required, time on the job and the purchase of new handles.

For more facts request No. 52 on reply card

COLES CRANES, INCORPORATED—Announces the introduction of a new 12 ton self-propelled crane to bridge the gap between



the 7½ and 15 ton models. This brings the number of crane sizes of this company to eight, ranging from the 1½ to 23 tons. Economy and low maintenance costs were designed into the new crane, making it a leader among defense establishments.

For more facts request No. 53 on reply card

NORTH AMERICAN VAN LINES, INC.—This organization has "more agents in more cities than any other van line," quoting this leader in long-distance moving. When moving on change of station, specify North American for fast efficient transportation. Be prepared for a transfer, with the knowledge borrowed from experts.

For more facts request No. 54 on reply card

BLACKHAWK HOTELS, Hotel Saint Paul and Hotel Lowry in St. Paul, Minnesota, Hotel Blackhawk, Hotel Mississippi, and Hotel Davenport in Davenport, Iowa, and Hotel Jefferson in Peoria, Illinois, offer Armed Forces Personnel the most modern accommodations at reasonable rates.

For more facts request No. 55 on reply card

WORLD RADIO LABORATORIES, the world's largest distributor of amateur radio equipment, offers their 1955 catalog without cost to all interested persons. This booklet contains over 15,000 items pertaining to the fields of amateur and industrial radio, electronics, high fidelity, etc. Many World Ra-

dio parts and sections of manufactured equipment are now in use by MARS and other departments of defense. Inquiry should also be made as to special finance plan, requiring only 10% initial down payment. Catalog should be of interest to personnel of all military departments.

For more facts request No. 56 on reply card

LESTER B. KNIGHT & ASSOCIATES, INC. Experienced management Counsel and specialized services to Armed Forces Management is offered by Knight engineers. If your operation will benefit by highly specialized skills in financial management, paperwork management, management controls, or plant engineering, a Knight representative will call upon your inquiry.

For more facts request No. 51 on reply card

THE RICHKRAFT CO.—Many contractors, engineers and architects have felt for some time that an improvement was desirable in membranes for use under slab and

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For more facts request No. 59 on reply card

Index to Advertisers

Blackhawk Hotels Page 19

Noted for their excellent service and matchless cuisine, the Mississippi, Davenport and Blackhawk hotels in Davenport, Iowa, the Saint Paul and Lowry in St. Paul, Minnesota, and Hotel Jefferson in Peoria, Illinois, are popular with services personnel traveling thru the Midwest.

Curtiss-Wright Corporation Page 2

Makers of some of the world's finest aircraft engines, this firm hints at some of the power it packed into the Grumman F9F-9 "Tiger" with its J65 Jet.

Douglas Aviation Fourth Cover

This leading aircraft manufacturing company proudly relates that the first production model of their new navy fighter, the Douglas F4D Skyray, surpassed the speed of sound during routine delivery flight.

Lester B. Knight and Associates, Inc. Page 9

Experienced management counsel and specialized services to the Armed Forces Management groups are available from this firm with an outstanding record of achievement in its field.

North American Van Lines, Inc. Page 17

With agents in more cities than any other van line, this leader in long-distance moving gives fast, efficient transportation performed with the knowledge of experts.

Railroads of the United States Page 4

Armed Forces Personnel and impedimenta are moved safely and economically each day by the Railroads of the United States. Approved travel facilities, together with rate reductions for military travel.

Republic Aviation Second Cover

This firm's F-84F Thunderstreaks strengthen more than ever the power and versatility of the Strategic Air Command.

Richcraft Company Page 1

Richcraft 65, pre-treated with special fungicide is easy to lay and inspect. A cost-saving membrane for under concrete slab and over crawl space where slab is not poured on the ground. Comes in 3, 4, 5, 6, 7 and 8 ft. widths.

Royal Motors Page 40

Offers automobile discounts to returning servicemen. This big East coast dealer also offers accessories at a savings of twenty-five per cent.

World Radio Laboratories Page 35

Save money on radio equipment. World Radio lists their free 1955 catalog with savings on all types of radio materials of up to 50 per cent.

over crawl spaces. The Richcraft Company of Chicago, Illinois, has recently made definite advancement in the design of such a paper known as Richcraft 65. This paper is definitely one of the major improvements in membrane waterproofing in the last ten years. The Richcraft Company has long been connected with the construction industry and is well-known as a distributor of a wide range of rein-

forced waterproofed papers, black papers and reflective insulation.

For more facts request No. 58 on reply card

ROYAL MOTORS. A leading eastern automobile dealer gives you one of the nation's leading 1955 automobiles at large pocketbook savings. Now is the time to invest in low-cost luxury.

For more facts request No. 59 on reply card

ARMED FORCES MANAGEMENT

AIR FORCE VETERANS



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Remember the service skills you learned in the Air Force? Now's the time to put that schooling to work *to your best advantage*. The experience and know-how you gained in service makes you a valuable man – and continued service will add to your earning capacity.

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turbo-prop ...



jet ...



and rocket ...

—only Douglas has used all four basic aircraft power plants

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Such experience leads to better integration of airframe and engine to tactical

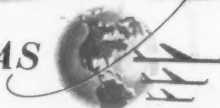
or logistic needs—more performance per pound of plane. The *jet-powered* F4D Skyray, capable of low-speed carrier landings, outraces sound in level flight. The piston-engine R6D-1 typifies the Douglas genius for economical and dependable air transports. The *turbo-prop*

YC-124B points to a new race of larger, faster cargo planes. The *rocket-powered* D-558-2 hits 1327 m.p.h.!

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